Supporting Materials

Long-term trends in total inorganic nitrogen and sulfur deposition in the U.S. from $1990\ to\ 2010$

Yuqiang Zhang, Rohit Mathur, Jesse O. Bash, Christian Hogrefe, Jia Xing, Shawn J. Roselle

US mask for ecoregion level 1

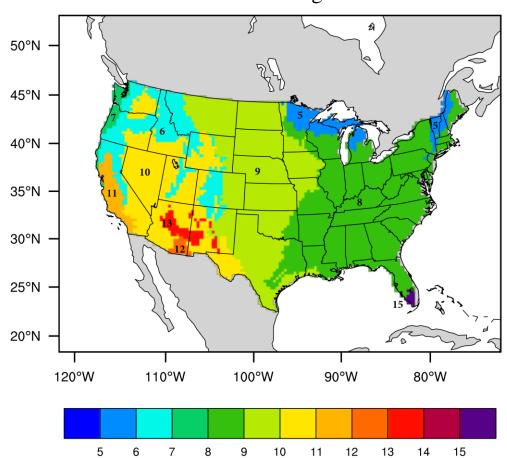


Figure S1. The 10 Level I ecoregions in the continental U.S.: 5 of Northern Forests, 6 of Northwestern Forested Mountains, 7 of Marine West Coast Forest, 8 of Eastern Temperate Forests, 9 of Great Plains, 10 of North American Deserts, 11 of Mediterranean California, 12 of Southern Semi-arid Highlands, 13 of Temperate Sierras, and 15 of Tropical Wet Forests.

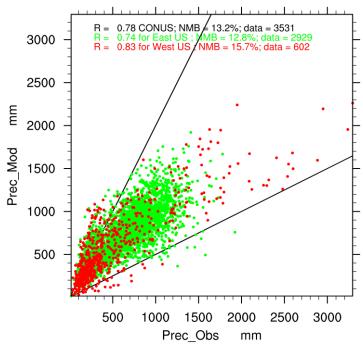


Figure S2. Scatter plots for the annual accumulated precipitation between observation and model results from 1990 to 2010 for 170 valid sites with 3531 valid data. The site in NADP is assumed valid if only at least 18 years of observation data is available with 75% annual coverage for the site. Each point in the plots represents the annual precipitation for a given site and year. Note that the annual accumulated precipitation may not be the actual annual totals because of the missing data in the observation.

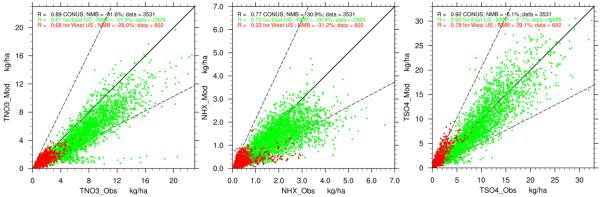


Figure S3. Scatter plots for the annual accumulated deposition (total oxidized nitrogen (TNO₃), reduced nitrogen (NH_X), and total sulfate (TSO_X)) without considering the precipitation adjustment between observation and model results from 1990 to 2010 for 170 valid sites with 3531 valid data. The site in NADP is assumed valid if only at least 18 years of observation data is available with 75% annual coverage for the site. Note that the annual accumulated deposition may not be the actual annual totals because of the missing data in the observation.

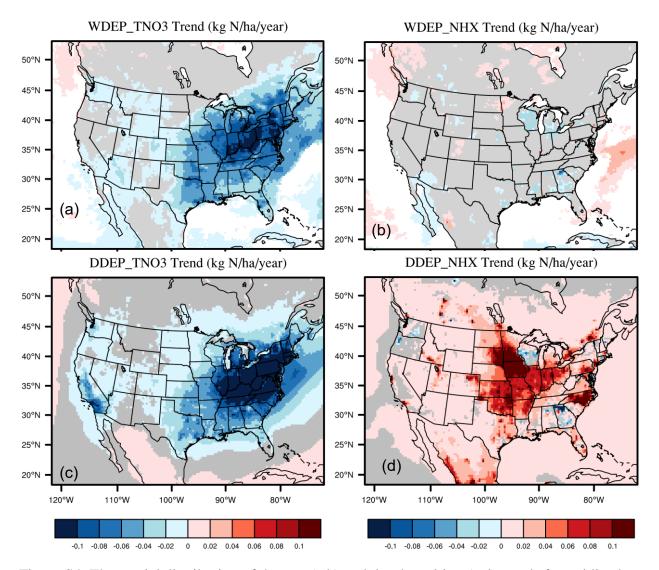


Figure S4. The spatial distribution of the wet (a,b) and dry deposition (c,d) trends for oxidized nitrogen (TNO_3, a,b) and reduced nitrogen (NH_X, c,d) .

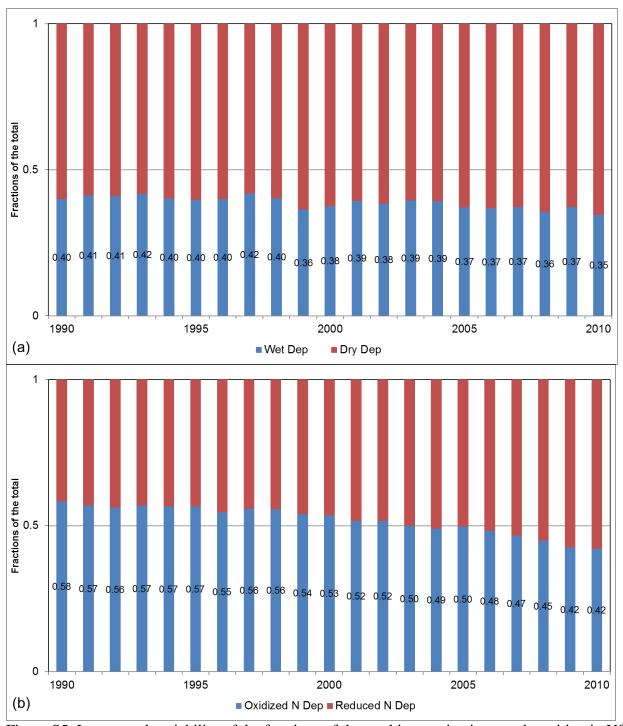


Figure S5. Interannual variability of the fractions of the total inorganic nitrogen deposition in US from 1990 to 2010, including (a) wet versus dry, and (b) oxidized versus reduced.

Table S1. List of configurations for the coupled WRF-CMAQ model from 1990 to 2010.

Parameter	Configuration
Emission	Xing et al., (2013)
Aerosol Chemistry	AERO6
Gas-phase Chemistry	Carbon Bond 05
Chemical Boundary Condition	Xing et al., (2015a)
Cumulus	Kain-Fritsch 2
Land Surface Model	Pleim-Xiu
Land Use Category	NLCD 50
Microphysics	Morrison 2-moment
Radiation	RRTMG SW & LW
Planetary Boundary Layer	ACM2 (Pleim, 2007)

Table S2. Location of the NADP observation networks with years of valid data, and the ecoregion definitions.

AL10 Black Belt Research & Extension Center 21 Eastern Temperate Forests	Site	Site Name	Valid	Ecoregion Level I
AL99 Sand Mountain Research & Extension Center AR02 Warren 2WSW AR03 Caddo Valley 21 Eastern Temperate Forests AR16 Buffalo National River-Buffalo Point 21 Eastern Temperate Forests AR27 Fayetteville 20 Eastern Temperate Forests AR27 Fayetteville 21 North American Deserts AR28 Cagna Pipe Cactus National Monument 22 North American Deserts AZ09 Oliver Knoll 23 Mediterranean California CA45 Hopland 24 Mediterranean California CA45 Hopland 25 Mediterranean California CA46 Hopland 26 Mediterranean California CA47 Sequoia National Park-Hodgdon Meadow 27 Mediterranean California CA88 Davis 28 Mediterranean California CA89 Vosemite National Park-Hodgdon Meadow 29 North American Deserts CO01 Las Animas Fish Hatchery CO02 Niwot Saddle CO03 Niwot Saddle CO04 Sequoia National Park-Beaver CO15 Sand Spring CO15 Sand Spring CO15 Sand Spring CO15 Sand Spring CO16 Manitou CO17 Manitou CO18 Meadows CO19 Meadows CO19 Meadows CO19 Meadows CO20 North Mestern Forested Mountains CO21 Manitou CO21 Manitou CO22 Pawnee CO31 Manitou CO31 Manitou CO32 Sunlight Peak CO33 Sunlight Peak CO34 Sunlight Peak CO35 Sunlight Peak CO36 Sundight Peak CO37 Sundight Peak CO38 Sunlight Peak CO39 Sunlight Peak CO30 Sunlight Peak CO40 Sunlight Peak CO40 Sunlight Peak CO50 Sunlight Peak CO50	ID		Years	
AR02 Warren 2WSW 21 Eastern Temperate Forests AR03 Caddo Valley 21 Eastern Temperate Forests 22 Eastern Temperate Forests AR16 Buffalo National River-Buffalo Point 21 Eastern Temperate Forests AR27 Fayetteville 22 Eastern Temperate Forests AR28 Fayetteville 23 Grand Canyon National Park-Hopi Point 24 North American Deserts AZ06 Organ Pipe Cactus National Monument 25 North American Deserts AZ09 Oliver Knoll 26 Southern Semi-arid Highlands AZ06 Organ Pipe Cactus National Monument AZ07 Eastern Temperate Forests AZ09 Oliver Knoll 20 Southern Semi-arid Highlands AZ08 Organ Pipe Cactus National Monument AZ09 Oliver Knoll AZ09 Mediterranean California AZ09 CA45 Hopland AZ09 Mediterranean California AZ09 Equoia National Park-Giant Forest AZ09 Mediterranean California AZ09 Pavis AZ00 Montague AZ00 North Mediterranean California AZ00 Posemite National Park-Hodgdon Meadow AZ00 North American Deserts AZ00 Alamosa AZ00 North American Deserts AZ000 Pour Mile Park AX000 Pour	AL10	Black Belt Research & Extension Center	21	Eastern Temperate Forests
AR103 Caddo Valley AR16 Buffalo National River-Buffalo Point AR27 Fayetteville 20 Eastern Temperate Forests AZ28 Grand Canyon National Park-Hopi Point AZ08 Grand Canyon National Park-Hopi Point AZ09 Oliver Knoll CA29 Oliver Knoll CA42 Tanbark Flat CA45 Hopland CA45 Hopland CA45 Hopland CA76 Sequoia National Park-Giant Forest CA77 Sequoia National Park-Giant Forest CA78 Davis CA79 Yosemite National Park-Hodgdon Meadow CA88 Davis CA99 Yosemite National Park-Hodgdon Meadow CA90 North American Deserts CA700 Alamosa CA700 Alamosa CA700 Alamosa CA700 Alamosa CA700 Alamosa CA700 North American California CA700 Alamosa CA700 Alamosa CA700 Alamosa CA700 North American California CA700 Alamosa CA700 North American California CA700 Alamosa CA700 North American Deserts CA701 Las Animas Fish Hatchery CA701 Las Animas Fish Hatchery CA702 Niwot Saddle CA704 Northwestern Forested Mountains CA705 Sand Spring CA705 Sand Spring CA706 Pour Mile Park CA707 Northwestern Forested Mountains CA708 Four Mile Park CA709 North American Deserts CA709 North American Deserts CA700 North American Deserts CA700 North American Deserts CA700 North American Deserts CA700 North American Deserts CA701 Northwestern Forested Mountains CA701 Northwestern Forested Mountains CA701 Northwestern Forested Mountains CA702 North American Deserts CA704 Northwestern Forested Mountains CA705 Northwestern Forested Mountains CA706 Northwestern Forested Mountains CA707 Northwestern Forested Mountains CA708 Northwestern Forested Mountains CA709 Northwestern Forested Mountains CA70	AL99	Sand Mountain Research & Extension Center	21	Eastern Temperate Forests
AR16 Buffalo National River-Buffalo Point 21 Eastern Temperate Forests AR27 Fayetteville 20 Eastern Temperate Forests 220 Grand Canyon National Park-Hopi Point 21 North American Deserts 220 North American Deserts 220 North American Deserts 220 Southern Semi-arid Highlands 221 Mediterranean California 223 Mediterranean California 224 Carbonal Park-Giant Forest 221 Mediterranean California 225 Mediterranean California 226 CA45 Hopland 221 Mediterranean California 227 Mediterranean California 228 CA75 Sequoia National Park-Giant Forest 221 Mediterranean California 228 CA76 Montague 221 Northwestern Forested Mountains 229 Northwestern Forested Mountains 220 North American Deserts 221 Mediterranean California 229 CA76 Montague 221 Northwestern Forested Mountains 220 North American Deserts 220 North American Deserts 221 Mediterranean California 222 Northwestern Forested Mountains 223 Northwestern Forested Mountains 224 Northwestern Forested Mountains 225 Northwestern Forested Mountains 226 North American Deserts 227 Northwestern Forested Mountains 228 Northwestern Forested Mountains 229 North American Deserts 220 North American Deserts 221 Northwestern Forested Mountains 221 Northwestern Forested Mountains 222 Northwestern Forested Mountains 223 Northwestern Forested Mountains 224 Northwestern Forested Mountains 225 Northwestern Forested Mountains 226 Northwestern Forested Mountains 227 Northwestern Forested Mountains 228 Northwestern Forested Mountains 229 Northwestern Forested Mountains 220 Northwestern Forested Mountain	AR02	Warren 2WSW	21	Eastern Temperate Forests
AR27 Fayetteville 20 Eastern Temperate Forests	AR03	Caddo Valley	21	
AZ03 Grand Canyon National Park-Hopi Point AZ09 Organ Pipe Cactus National Monument 20 North American Deserts AZ09 Oliver Knoll 20 Southern Semi-arid Highlands CA42 Tanbark Flat 21 Mediterranean California CA45 Hopland 21 Mediterranean California CA75 Sequoia National Park-Giant Forest 21 Mediterranean California CA76 Montague 21 Northwestern Forested Mountains CA99 Yosemite National Park-Hodgdon Meadow 21 Northwestern Forested Mountains CA90 Yosemite National Park-Hodgdon Meadow 21 Northwestern Forested Mountains CO00 Alamosa 20 North American Deserts CO01 Las Animas Fish Hatchery 21 Great Plains CO02 Niwot Saddle 21 Northwestern Forested Mountains CO08 Four Mile Park 21 Northwestern Forested Mountains Rocky Mountain National Park-Beaver Rocky Mountain National Park-Beaver Rocky Mountain National Park-Beaver Waladows 21 Northwestern Forested Mountains CO01 Manitou 21 Northwestern Forested Mountains CO02 Sunlight Peak 18 Northwestern Forested Mountains CO09 Sunlight Peak 21 Northwestern Forested Mountains CO09 Buffalo Pass - Dry Lake 21 Northwestern Forested Mountains CO09 Buffalo Pass - Summit Lake 20 Northwestern Forested Mountains CO09 Buffalo Pass - Summit Lake 20 Northwestern Forested Mountains CO09 Mesa Verde National Park-Chapin Mesa 21 Northwestern Forested Mountains CO09 Mesa Verde National Park-Chapin Mesa 21 Northwestern Forested Mountains CO09 Mesa Verde National Park-Chapin Mesa 21 Northwestern Forested Mountains CO09 Mesa Verde National Park-Chapin Mesa 21 Northwestern Forested Mountains CO09 Mesa Verde National Park-Chapin Mesa 21 Northwestern Forested Mountains CO09 Mesa Verde National Park-Chapin Mesa 21 Northwestern Forested Mountains CO09 Mesa Verde National Park-Chapin Mesa 21 Northwestern Forested Mountains CO09 Mesa Verde National Park-Chapin Mesa 21 Northwestern Forested Mountains CO09 Mesa Verde National Park-Chapin Mesa 21 Nort	AR16	Buffalo National River-Buffalo Point	21	Eastern Temperate Forests
AZ06 Organ Pipe Cactus National Monument 20 North American Deserts AZ99 Oliver Knoll 20 Southern Semi-arid Highlands CA42 Tanbark Flat 21 Mediterranean California CA45 Hopland 21 Mediterranean California CA75 Sequoia National Park-Giant Forest 21 Mediterranean California CA76 Montague 21 Northwestern Forested Mountains CA88 Davis 21 Mediterranean California CA89 Yosemite National Park-Hodgdon Meadow 21 Northwestern Forested Mountains CO00 Alamosa 20 North American Deserts CO01 Las Animas Fish Hatchery 21 Great Plains CO02 Niwot Saddle 21 Northwestern Forested Mountains CO03 Four Mile Park 21 Northwestern Forested Mountains CO15 Sand Spring 21 North American Deserts CO29 Meadows 21 Northwestern Forested Mountains CO21 Manitou 21 Northwestern For	AR27	Fayetteville	20	Eastern Temperate Forests
AZ99Oliver Knoll20Southern Semi-arid HighlandsCA42Tanbark Flat21Mediterranean CaliforniaCA45Hopland21Mediterranean CaliforniaCA75Sequoia National Park-Giant Forest21Mediterranean CaliforniaCA76Montague21Northwestern Forested MountainsCA89Davis21Mediterranean CaliforniaCA99Yosemite National Park-Hodgdon Meadow21Northwestern Forested MountainsC000Alamosa20North American DesertsC001Las Animas Fish Hatchery21Great PlainsC002Niwot Saddle21Northwestern Forested MountainsC003Four Mile Park21Northwestern Forested MountainsC015Sand Spring21Northwestern Forested MountainsC015Sand Spring21Northwestern Forested MountainsC021Meadows21Northwestern Forested MountainsC022Pawnee21Great PlainsC091Wolf Creek Pass18Northwestern Forested MountainsC092Sunlight Peak18Northwestern Forested MountainsC093Sugarloaf21Northwestern Forested MountainsC094Sugarloaf21Northwestern Forested MountainsC095Molas Pass21Northwestern Forested MountainsC096Molas Pass21Northwestern Forested MountainsC097Buffalo Pass - Summit Lake20Northwestern Forested MountainsC098<	AZ03	Grand Canyon National Park-Hopi Point	21	North American Deserts
CA42 Tanbark Flat 21 Mediterranean California CA45 Hopland 21 Mediterranean California CA75 Sequoia National Park-Giant Forest 21 Mediterranean California CA76 Montague 21 Northwestern Forested Mountains CA88 Davis 21 Mediterranean California CA99 Yosemite National Park-Hodgdon Meadow 21 North American Deserts CO001 Las Animas Fish Hatchery 21 Great Plains C002 Niwot Saddle 21 Northwestern Forested Mountains C003 Four Mile Park 21 Northwestern Forested Mountains C004 Sand Spring 21 North American Deserts C019 Meadows 21 Northwestern Forested Mountains C021 Manitou 21 Northwestern Forested Mountains C022 Pawnee 21 Great Plains C091 Wolf Creek Pass 18 Northwestern Forested Mountains C092 Pawnee 21 Great Plains C093 Buffalo Pass - Dry Lake 21 Northwestern Forested Mountains <td>AZ06</td> <td>Organ Pipe Cactus National Monument</td> <td>20</td> <td>North American Deserts</td>	AZ06	Organ Pipe Cactus National Monument	20	North American Deserts
CA45 Hopland 21 Mediterranean California CA75 Sequoia National Park-Giant Forest 21 Mediterranean California CA76 Montague 21 Northwestern Forested Mountains CA88 Davis 21 Mediterranean California CA99 Yosemite National Park-Hodgdon Meadow 21 North American Deserts C001 Las Animas Fish Hatchery 21 Great Plains C002 Niwot Saddle 21 Northwestern Forested Mountains C003 Four Mile Park 21 Northwestern Forested Mountains C015 Sand Spring 21 Northwestern Forested Mountains C015 Sand Spring 21 Northwestern Forested Mountains C016 Meadows 21 Northwestern Forested Mountains C021 Manitou 21 Northwestern Forested Mountains C022 Pawnee 21 Great Plains C023 Mulight Peak 18 Northwestern Forested Mountains C024 Sugarloaf 21 Northwestern Forested Mountains <td>AZ99</td> <td>Oliver Knoll</td> <td>20</td> <td>Southern Semi-arid Highlands</td>	AZ99	Oliver Knoll	20	Southern Semi-arid Highlands
CA75 Sequoia National Park-Giant Forest 21 Mediterranean California CA76 Montague 21 Northwestern Forested Mountains CA88 Davis 21 Mediterranean California CA89 Yosemite National Park-Hodgdon Meadow 21 Northwestern Forested Mountains CO00 Alamosa 20 North American Deserts CO01 Las Animas Fish Hatchery 21 Great Plains CO02 Niwot Saddle 21 Northwestern Forested Mountains CO08 Four Mile Park 21 Northwestern Forested Mountains CO15 Sand Spring 21 Northwestern Forested Mountains CO15 Sand Spring 21 Northwestern Forested Mountains CO15 Sand Spring 21 Northwestern Forested Mountains CO16 Meadows 21 Northwestern Forested Mountains CO21 Manitou 21 Northwestern Forested Mountains CO22 Pawnee 21 Northwestern Forested Mountains CO22 Sunlight Peak 18 Northw	CA42	Tanbark Flat	21	Mediterranean California
CA76Montague21Northwestern Forested MountainsCA88Davis21Mediterranean CaliforniaCA99Yosemite National Park-Hodgdon Meadow21Northwestern Forested MountainsCO00Alamosa20North American DesertsCO01Las Animas Fish Hatchery21Great PlainsCO02Niwot Saddle21Northwestern Forested MountainsCO08Four Mile Park21Northwestern Forested MountainsCO19Sand Spring21Northwestern Forested MountainsCO19Meadows21Northwestern Forested MountainsCO21Manitou21Northwestern Forested MountainsCO22Pawnee21Great PlainsCO91Wolf Creek Pass18Northwestern Forested MountainsCO92Sunlight Peak18Northwestern Forested MountainsCO93Buffalo Pass - Dry Lake21Northwestern Forested MountainsCO94Sugarloaf21Northwestern Forested MountainsCO95Molas Pass21Northwestern Forested MountainsCO96Molas Pass21Northwestern Forested MountainsCO97Buffalo Pass - Summit Lake20Northwestern Forested MountainsCO98Rocky Mountain National Park-Loch Vale21Northwestern Forested MountainsCO99Mesa Verde National Park-Chapin Mesa21Northwestern ForestsFL11Everglades National Park-Research Center21Eastern Temperate ForestsFL41Verna We	CA45		21	Mediterranean California
CA88Davis21Mediterranean CaliforniaCA99Yosemite National Park-Hodgdon Meadow21Northwestern Forested MountainsCO00Alamosa20North American DesertsCO01Las Animas Fish Hatchery21Great PlainsCO02Niwot Saddle21Northwestern Forested MountainsCO08Four Mile Park21Northwestern Forested MountainsCO15Sand Spring21North American DesertsRocky Mountain National Park-Beaver21Northwestern Forested MountainsCO21Manitou21Northwestern Forested MountainsCO22Pawnee21Great PlainsCO91Wolf Creek Pass18Northwestern Forested MountainsCO92Sunlight Peak18Northwestern Forested MountainsCO93Sulffalo Pass - Dry Lake21Northwestern Forested MountainsCO94Sugarloaf21Northwestern Forested MountainsCO95Molas Pass21Northwestern Forested MountainsCO96Molas Pass21Northwestern Forested MountainsCO97Buffalo Pass - Summit Lake20Northwestern Forested MountainsCO98Rocky Mountain National Park-Loch Vale21Northwestern Forested MountainsCO99Mesa Verde National Park-Chapin Mesa21Northwestern ForestsFL11Everglades National Park-Research Center21Eastern Temperate ForestsFL14Verna Well Field21Eastern Temperate ForestsFL41 <td< td=""><td>CA75</td><td>Sequoia National Park-Giant Forest</td><td>21</td><td>Mediterranean California</td></td<>	CA75	Sequoia National Park-Giant Forest	21	Mediterranean California
CA99Yosemite National Park-Hodgdon Meadow21Northwestern Forested MountainsCO00Alamosa20North American DesertsCO01Las Animas Fish Hatchery21Great PlainsCO02Niwot Saddle21Northwestern Forested MountainsCO08Four Mile Park21Northwestern Forested MountainsCO15Sand Spring21North American DesertsCO19Meadows21Northwestern Forested MountainsCO21Manitou21Northwestern Forested MountainsCO22Pawnee21Great PlainsCO91Wolf Creek Pass18Northwestern Forested MountainsCO92Sunlight Peak18Northwestern Forested MountainsCO93Buffalo Pass - Dry Lake21Northwestern Forested MountainsCO94Sugarloaf21Northwestern Forested MountainsCO95Molas Pass21Northwestern Forested MountainsCO96Molas Pass21Northwestern Forested MountainsCO97Buffalo Pass - Summit Lake20Northwestern Forested MountainsCO98Rocky Mountain National Park-Coapin Mesa21Northwestern Forested MountainsCO99Mesa Verde National Park-Research Center21Eastern Temperate ForestsFL11Everglades National Park-Research Center21Eastern Temperate ForestsFL41Verna Well Field21Eastern Temperate ForestsFL41Verna Well Field21Eastern Temperate ForestsGA20<	CA76		21	Northwestern Forested Mountains
CO00 Alamosa 20 North American Deserts CO01 Las Animas Fish Hatchery 21 Great Plains CO02 Niwot Saddle 21 Northwestern Forested Mountains CO08 Four Mile Park 21 Northwestern Forested Mountains CO15 Sand Spring 21 North American Deserts Rocky Mountain National Park-Beaver CO19 Meadows 21 Northwestern Forested Mountains CO21 Manitou 21 Northwestern Forested Mountains CO22 Pawnee 21 Great Plains CO91 Wolf Creek Pass 18 Northwestern Forested Mountains CO92 Sunlight Peak 18 Northwestern Forested Mountains CO93 Buffalo Pass - Dry Lake 21 Northwestern Forested Mountains CO94 Sugarloaf 21 Northwestern Forested Mountains CO96 Molas Pass 21 Northwestern Forested Mountains CO97 Buffalo Pass - Summit Lake 20 Northwestern Forested Mountains CO98 Rocky Mountain National Park-Loch Vale 21 Northwestern Forested Mountains CO99 Mesa Verde National Park-Chapin Mesa 21 Northwestern Forested Mountains CO99 Mesa Verde National Park-Research Center 21 Tropical Wet Forests FL03 Bradford Forest 21 Eastern Temperate Forests FL14 Quincy 21 Eastern Temperate Forests FL14 Quincy 21 Eastern Temperate Forests FL14 Verna Well Field 21 Eastern Temperate Forests FL41 Verna Well Field 21 Eastern Temperate Forests FL99 Kennedy Space Center 21 Eastern Temperate Forests FL99 Kennedy Space Center 21 Eastern Temperate Forests GA20 Bellville 19 Eastern Temperate Forests FL99 Kennedy Space Center 21 Eastern Temperate Forests FL90 Eastern Temperate Forests FL91 Georgia Station 21 Eastern Temperate Forests FL90 Fastern Temperate Forests FL91 Fastern Temperate Forests FL92 Fastern Temperate Forests FL93	CA88	Davis	21	Mediterranean California
CO01Las Animas Fish Hatchery21Great PlainsCO02Niwot Saddle21Northwestern Forested MountainsCO08Four Mile Park21Northwestern Forested MountainsCO15Sand Spring21North American DesertsRocky Mountain National Park-Beaver21Northwestern Forested MountainsCO21Manitou21Northwestern Forested MountainsCO22Pawnee21Great PlainsCO91Wolf Creek Pass18Northwestern Forested MountainsCO92Sunlight Peak18Northwestern Forested MountainsCO93Buffalo Pass - Dry Lake21Northwestern Forested MountainsCO94Sugarloaf21Northwestern Forested MountainsCO95Molas Pass21Northwestern Forested MountainsCO96Molas Pass - Summit Lake20Northwestern Forested MountainsCO97Buffalo Pass - Summit Lake20Northwestern Forested MountainsCO98Rocky Mountain National Park-Loch Vale21Northwestern Forested MountainsCO99Mesa Verde National Park-Chapin Mesa21North American DesertsFL03Bradford Forest21Eastern Temperate ForestsFL11Everglades National Park-Research Center21Tropical Wet ForestsFL11Quincy21Eastern Temperate ForestsFL41Verna Well Field21Eastern Temperate ForestsFL41Verna Well Field21Eastern Temperate ForestsGA20Bel	CA99	Yosemite National Park-Hodgdon Meadow	21	Northwestern Forested Mountains
CO02Niwot Saddle21Northwestern Forested MountainsCO08Four Mile Park21Northwestern Forested MountainsCO15Sand Spring21North American DesertsRocky Mountain National Park-Beaver21Northwestern Forested MountainsCO21Manitou21Northwestern Forested MountainsCO22Pawnee21Great PlainsCO91Wolf Creek Pass18Northwestern Forested MountainsCO92Sunlight Peak18Northwestern Forested MountainsCO93Buffalo Pass - Dry Lake21Northwestern Forested MountainsCO94Sugarloaf21Northwestern Forested MountainsCO96Molas Pass21Northwestern Forested MountainsCO96Molas Pass - Summit Lake20Northwestern Forested MountainsCO97Buffalo Pass - Summit Lake20Northwestern Forested MountainsCO98Rocky Mountain National Park-Loch Vale21Northwestern Forested MountainsCO99Mesa Verde National Park-Chapin Mesa21North American DesertsFL03Bradford Forest21Eastern Temperate ForestsFL11Everglades National Park-Research Center21Eastern Temperate ForestsFL41Verna Well Field21Eastern Temperate ForestsFL41Verna Well Field21Eastern Temperate ForestsGA20Bellville19Eastern Temperate ForestsGA41Georgia Station21Eastern Temperate ForestsIA23	CO00	Alamosa	20	North American Deserts
CO02Niwot Saddle21Northwestern Forested MountainsCO08Four Mile Park21Northwestern Forested MountainsCO15Sand Spring21North American DesertsRocky Mountain National Park-Beaver21Northwestern Forested MountainsCO21Manitou21Northwestern Forested MountainsCO22Pawnee21Great PlainsCO91Wolf Creek Pass18Northwestern Forested MountainsCO92Sunlight Peak18Northwestern Forested MountainsCO93Buffalo Pass - Dry Lake21Northwestern Forested MountainsCO94Sugarloaf21Northwestern Forested MountainsCO96Molas Pass21Northwestern Forested MountainsCO96Molas Pass - Summit Lake20Northwestern Forested MountainsCO97Buffalo Pass - Summit Lake20Northwestern Forested MountainsCO98Rocky Mountain National Park-Loch Vale21Northwestern Forested MountainsCO99Mesa Verde National Park-Chapin Mesa21North American DesertsFL03Bradford Forest21Eastern Temperate ForestsFL11Everglades National Park-Research Center21Eastern Temperate ForestsFL41Verna Well Field21Eastern Temperate ForestsFL41Verna Well Field21Eastern Temperate ForestsGA20Bellville19Eastern Temperate ForestsGA41Georgia Station21Eastern Temperate ForestsIA23	CO01	Las Animas Fish Hatchery	21	Great Plains
CO15 Sand Spring Rocky Mountain National Park-Beaver Rocky Mountain National Park-Beaver Meadows CO21 Manitou CO22 Pawnee CO32 Pawnee CO34 Wolf Creek Pass CO35 Sunlight Peak CO36 Sunlight Peak CO37 Sunlight Peak CO38 Buffalo Pass - Dry Lake CO39 Sugarloaf CO39 Sugarloaf CO30 Wolf Creek Pass CO30 Wolf Spass CO31 Northwestern Forested Mountains CO30 Sugarloaf CO30 Sugarloaf CO31 Northwestern Forested Mountains CO30 Sugarloaf CO30 Wolf Spass CO31 Northwestern Forested Mountains CO30 Sugarloaf CO30 Wolf Spass CO31 Northwestern Forested Mountains CO30 Molas Pass CO31 Northwestern Forested Mountains CO31 Northwestern Forested Mountains CO32 Buffalo Pass - Summit Lake CO33 Northwestern Forested Mountains CO34 Northwestern Forested Mountains CO35 Wolfand Park-Chapin Mesa CO36 Rocky Mountain National Park-Chapin Mesa CO37 Buffalo Pass - Summit Lake CO38 Rocky Mountain National Park-Chapin Mesa CO39 Mesa Verde National Park-Chapin Mesa CO30 Beastern Temperate Forests FL11 Everglades National Park-Research Center CO30 Spass Spass Center CO30 Spass Spass Center CO31 Spass Spa			21	Northwestern Forested Mountains
Rocky Mountain National Park-Beaver CO19 Meadows 21 Northwestern Forested Mountains CO21 Manitou 21 Northwestern Forested Mountains CO22 Pawnee 21 Great Plains CO91 Wolf Creek Pass 18 Northwestern Forested Mountains CO92 Sunlight Peak 18 Northwestern Forested Mountains CO93 Buffalo Pass - Dry Lake 21 Northwestern Forested Mountains CO94 Sugarloaf CO94 Sugarloaf CO95 Molas Pass CO96 Molas Pass CO97 Buffalo Pass - Summit Lake CO97 Buffalo Pass - Summit Lake CO98 Rocky Mountain National Park-Loch Vale CO99 Mesa Verde National Park-Chapin Mesa CO99 Mesa Verde National Park-Chapin Mesa CO99 Mesa Verde National Park-Chapin Mesa CO99 Mesa Verde National Park-Research Center CO99 Mesa Verde National Park-Chapin Mesa CO90 Mesa Verde National Park-Chapin Mesa CO91 North American Deserts CO90 Mesa Verde National Mountains	CO08	Four Mile Park	21	Northwestern Forested Mountains
Rocky Mountain National Park-Beaver CO19 Meadows CO21 Manitou CO22 Pawnee CO22 Pawnee CO31 Wolf Creek Pass CO31 Wolf Creek Pass CO32 Sunlight Peak CO32 Sunlight Peak CO33 Buffalo Pass - Dry Lake CO34 Sugarloaf CO35 Sugarloaf CO36 Molas Pass CO37 Buffalo Pass - Summit Lake CO37 Buffalo Pass - Summit Lake CO38 Rocky Mountain National Park-Loch Vale CO39 Rocky Mountain National Park-Chapin Mesa CO39 Buffalo Pass - Summit Lake CO30 Rocky Mountain National Park-Chapin Mesa CO30 Buffalo Pass - Summit Lake CO30 Rocky Mountain National Park-Chapin Mesa CO30 Buffalo Pass - Summit Lake CO30 Rocky Mountain National Park-Chapin Mesa CO30 Buffalo Pass - Summit Lake CO30 Rocky Mountain National Park-Chapin Mesa CO30 Buffalo Pass - Summit Lake CO30 Buffalo Pass - Summit Lake CO40 Buffalo Pass - Summit Lake CO50 Rocky Mountain National Park-Chapin Mesa CO40 Buffalo Pask - Chapin Mesa CO50 Buffalo Pask - Chapin Mesa CO50 Buffalo Pask - Chapin Mesa CO60 Buffalo Pask - Chapin Mesa CO70 Buffalo	CO15	Sand Spring	21	North American Deserts
CO19Meadows21Northwestern Forested MountainsCO21Manitou21Northwestern Forested MountainsCO22Pawnee21Great PlainsCO91Wolf Creek Pass18Northwestern Forested MountainsCO92Sunlight Peak18Northwestern Forested MountainsCO93Buffalo Pass - Dry Lake21Northwestern Forested MountainsCO94Sugarloaf21Northwestern Forested MountainsCO96Molas Pass21Northwestern Forested MountainsCO97Buffalo Pass - Summit Lake20Northwestern Forested MountainsCO98Rocky Mountain National Park-Loch Vale21Northwestern Forested MountainsCO99Mesa Verde National Park-Chapin Mesa21North American DesertsFL03Bradford Forest21Eastern Temperate ForestsFL11Everglades National Park-Research Center21Tropical Wet ForestsFL14Quincy21Eastern Temperate ForestsFL41Verna Well Field21Eastern Temperate ForestsFL41Verna Well Field21Eastern Temperate ForestsGA20Bellville19Eastern Temperate ForestsGA41Georgia Station21Eastern Temperate ForestsIA08Big Springs Fish Hatchery20Eastern Temperate ForestsIA23McNay Research Center21Great PlainsID03Craters of the Moon National Monument21Northwestern Forested MountainsID11Reyno				
CO22Pawnee21Great PlainsCO91Wolf Creek Pass18Northwestern Forested MountainsCO92Sunlight Peak18Northwestern Forested MountainsCO93Buffalo Pass - Dry Lake21Northwestern Forested MountainsCO94Sugarloaf21Northwestern Forested MountainsCO96Molas Pass21Northwestern Forested MountainsCO97Buffalo Pass - Summit Lake20Northwestern Forested MountainsCO98Rocky Mountain National Park-Loch Vale21Northwestern Forested MountainsCO99Mesa Verde National Park-Chapin Mesa21North American DesertsFL03Bradford Forest21Eastern Temperate ForestsFL11Everglades National Park-Research Center21Tropical Wet ForestsFL14Quincy21Eastern Temperate ForestsFL41Verna Well Field21Eastern Temperate ForestsFL99Kennedy Space Center21Eastern Temperate ForestsGA20Bellville19Eastern Temperate ForestsGA41Georgia Station21Eastern Temperate ForestsIA08Big Springs Fish Hatchery20Eastern Temperate ForestsIA23McNay Research Center21Great PlainsID03Craters of the Moon National Monument21Northwestern Forested MountainsID11Reynolds Creek21North American Deserts	CO19		21	Northwestern Forested Mountains
CO91Wolf Creek Pass18Northwestern Forested MountainsCO92Sunlight Peak18Northwestern Forested MountainsCO93Buffalo Pass - Dry Lake21Northwestern Forested MountainsCO94Sugarloaf21Northwestern Forested MountainsCO96Molas Pass21Northwestern Forested MountainsCO97Buffalo Pass - Summit Lake20Northwestern Forested MountainsCO98Rocky Mountain National Park-Loch Vale21Northwestern Forested MountainsCO99Mesa Verde National Park-Chapin Mesa21North American DesertsFL03Bradford Forest21Eastern Temperate ForestsFL11Everglades National Park-Research Center21Tropical Wet ForestsFL14Quincy21Eastern Temperate ForestsFL41Verna Well Field21Eastern Temperate ForestsFL99Kennedy Space Center21Eastern Temperate ForestsGA20Bellville19Eastern Temperate ForestsGA41Georgia Station21Eastern Temperate ForestsIA08Big Springs Fish Hatchery20Eastern Temperate ForestsIA23McNay Research Center21Great PlainsID03Craters of the Moon National Monument21Northwestern Forested MountainsID11Reynolds Creek21North American Deserts	CO21	Manitou	21	Northwestern Forested Mountains
CO92Sunlight Peak18Northwestern Forested MountainsCO93Buffalo Pass - Dry Lake21Northwestern Forested MountainsCO94Sugarloaf21Northwestern Forested MountainsCO96Molas Pass21Northwestern Forested MountainsCO97Buffalo Pass - Summit Lake20Northwestern Forested MountainsCO98Rocky Mountain National Park-Loch Vale21Northwestern Forested MountainsCO99Mesa Verde National Park-Chapin Mesa21North American DesertsFL03Bradford Forest21Eastern Temperate ForestsFL11Everglades National Park-Research Center21Tropical Wet ForestsFL14Quincy21Eastern Temperate ForestsFL41Verna Well Field21Eastern Temperate ForestsFL99Kennedy Space Center21Eastern Temperate ForestsGA20Bellville19Eastern Temperate ForestsGA41Georgia Station21Eastern Temperate ForestsIA08Big Springs Fish Hatchery20Eastern Temperate ForestsIA23McNay Research Center21Great PlainsID03Craters of the Moon National Monument21Northwestern Forested MountainsID11Reynolds Creek21North American Deserts	CO22	Pawnee	21	Great Plains
CO93Buffalo Pass - Dry Lake21Northwestern Forested MountainsCO94Sugarloaf21Northwestern Forested MountainsCO96Molas Pass21Northwestern Forested MountainsCO97Buffalo Pass - Summit Lake20Northwestern Forested MountainsCO98Rocky Mountain National Park-Loch Vale21Northwestern Forested MountainsCO99Mesa Verde National Park-Chapin Mesa21North American DesertsFL03Bradford Forest21Eastern Temperate ForestsFL11Everglades National Park-Research Center21Tropical Wet ForestsFL14Quincy21Eastern Temperate ForestsFL41Verna Well Field21Eastern Temperate ForestsFL99Kennedy Space Center21Eastern Temperate ForestsGA20Bellville19Eastern Temperate ForestsGA41Georgia Station21Eastern Temperate ForestsIA08Big Springs Fish Hatchery20Eastern Temperate ForestsIA23McNay Research Center21Great PlainsID03Craters of the Moon National Monument21Northwestern Forested MountainsID11Reynolds Creek21North American Deserts	CO91	Wolf Creek Pass	18	Northwestern Forested Mountains
CO94Sugarloaf21Northwestern Forested MountainsCO96Molas Pass21Northwestern Forested MountainsCO97Buffalo Pass - Summit Lake20Northwestern Forested MountainsCO98Rocky Mountain National Park-Loch Vale21Northwestern Forested MountainsCO99Mesa Verde National Park-Chapin Mesa21North American DesertsFL03Bradford Forest21Eastern Temperate ForestsFL11Everglades National Park-Research Center21Tropical Wet ForestsFL14Quincy21Eastern Temperate ForestsFL41Verna Well Field21Eastern Temperate ForestsFL99Kennedy Space Center21Eastern Temperate ForestsGA20Bellville19Eastern Temperate ForestsGA41Georgia Station21Eastern Temperate ForestsIA08Big Springs Fish Hatchery20Eastern Temperate ForestsIA23McNay Research Center21Great PlainsID03Craters of the Moon National Monument21Northwestern Forested MountainsID11Reynolds Creek21North American Deserts	CO92	Sunlight Peak	18	Northwestern Forested Mountains
CO94Sugarloaf21Northwestern Forested MountainsCO96Molas Pass21Northwestern Forested MountainsCO97Buffalo Pass - Summit Lake20Northwestern Forested MountainsCO98Rocky Mountain National Park-Loch Vale21Northwestern Forested MountainsCO99Mesa Verde National Park-Chapin Mesa21North American DesertsFL03Bradford Forest21Eastern Temperate ForestsFL11Everglades National Park-Research Center21Tropical Wet ForestsFL14Quincy21Eastern Temperate ForestsFL41Verna Well Field21Eastern Temperate ForestsFL99Kennedy Space Center21Eastern Temperate ForestsGA20Bellville19Eastern Temperate ForestsGA41Georgia Station21Eastern Temperate ForestsIA08Big Springs Fish Hatchery20Eastern Temperate ForestsIA23McNay Research Center21Great PlainsID03Craters of the Moon National Monument21Northwestern Forested MountainsID11Reynolds Creek21North American Deserts	CO93	Buffalo Pass - Dry Lake	21	Northwestern Forested Mountains
CO96Molas Pass21Northwestern Forested MountainsCO97Buffalo Pass - Summit Lake20Northwestern Forested MountainsCO98Rocky Mountain National Park-Loch Vale21Northwestern Forested MountainsCO99Mesa Verde National Park-Chapin Mesa21North American DesertsFL03Bradford Forest21Eastern Temperate ForestsFL11Everglades National Park-Research Center21Tropical Wet ForestsFL14Quincy21Eastern Temperate ForestsFL41Verna Well Field21Eastern Temperate ForestsFL99Kennedy Space Center21Eastern Temperate ForestsGA20Bellville19Eastern Temperate ForestsGA41Georgia Station21Eastern Temperate ForestsIA08Big Springs Fish Hatchery20Eastern Temperate ForestsIA23McNay Research Center21Great PlainsID03Craters of the Moon National Monument21Northwestern Forested MountainsID11Reynolds Creek21North American Deserts	CO94	•	21	Northwestern Forested Mountains
CO98Rocky Mountain National Park-Loch Vale21Northwestern Forested MountainsCO99Mesa Verde National Park-Chapin Mesa21North American DesertsFL03Bradford Forest21Eastern Temperate ForestsFL11Everglades National Park-Research Center21Tropical Wet ForestsFL14Quincy21Eastern Temperate ForestsFL41Verna Well Field21Eastern Temperate ForestsFL99Kennedy Space Center21Eastern Temperate ForestsGA20Bellville19Eastern Temperate ForestsGA41Georgia Station21Eastern Temperate ForestsIA08Big Springs Fish Hatchery20Eastern Temperate ForestsIA23McNay Research Center21Great PlainsID03Craters of the Moon National Monument21Northwestern Forested MountainsID11Reynolds Creek21North American Deserts	CO96	Molas Pass	21	Northwestern Forested Mountains
CO99Mesa Verde National Park-Chapin Mesa21North American DesertsFL03Bradford Forest21Eastern Temperate ForestsFL11Everglades National Park-Research Center21Tropical Wet ForestsFL14Quincy21Eastern Temperate ForestsFL41Verna Well Field21Eastern Temperate ForestsFL99Kennedy Space Center21Eastern Temperate ForestsGA20Bellville19Eastern Temperate ForestsGA41Georgia Station21Eastern Temperate ForestsIA08Big Springs Fish Hatchery20Eastern Temperate ForestsIA23McNay Research Center21Great PlainsID03Craters of the Moon National Monument21Northwestern Forested MountainsID11Reynolds Creek21North American Deserts	CO97	Buffalo Pass - Summit Lake	20	Northwestern Forested Mountains
FL03 Bradford Forest FL11 Everglades National Park-Research Center FL14 Quincy FL41 Verna Well Field FL99 Kennedy Space Center GA20 Bellville GA41 Georgia Station IA08 Big Springs Fish Hatchery IA23 McNay Research Center ID03 Craters of the Moon National Monument ID11 Reynolds Creek 21 Eastern Temperate Forests 21 Eastern Temperate Forests 22 Eastern Temperate Forests 23 Eastern Temperate Forests 24 Eastern Temperate Forests 25 Eastern Temperate Forests 26 Eastern Temperate Forests 27 Eastern Temperate Forests 28 Eastern Temperate Forests 29 Eastern Temperate Forests 20 Eastern Temperate Forests 21 Eastern Temperate Forests 22 Eastern Temperate Forests 23 Eastern Temperate Forests 24 Eastern Temperate Forests 25 Eastern Temperate Forests 26 Eastern Temperate Forests 27 Eastern Temperate Forests 28 Eastern Temperate Forests 29 Eastern Temperate Forests 20 Eastern Temperate Forests 21 Eastern Temperate Forests 22 Eastern Temperate Forests 23 Eastern Temperate Forests 24 Eastern Temperate Forests 25 Eastern Temperate Forests 26 Eastern Temperate Forests 27 Eastern Temperate Forests 28 Eastern Temperate Forests 29 Eastern Temperate Forests 20 Eastern Temperate Forests 21 Eastern Temperate Forests 22 Eastern Temperate Forests 23 Eastern Temperate Forests 24 Eastern Temperate Forests 26 Eastern Temperate Forests 27 Eastern Temperate Forests 28 Eastern Temperate Forests 29 Eastern Temperate Forests 20 Eastern Temperate Forests 20 Eastern Temperate Forests 21 Eastern Temperate Forests 22 Eastern Temperate Forests 23 Eastern Temperate Forests 24 Eastern Temperate Forests 25 Eastern Temperate Forests 26 Eastern Temperate Forests 27 Eastern Temperate Forests 28 Eastern Temperate Forests 29 Eastern Temperate Forests 20 Eastern Temperate Forests 20 Eastern Temperate Forests 21 Eastern Temperate Forests 22 Eastern Temperate Forests 23 Eastern Temperate Forests 24 Eastern Temperate Forests 25 Eastern Temperate Forests 26 Eastern Temperate Forests 27 Eastern	CO98	Rocky Mountain National Park-Loch Vale	21	Northwestern Forested Mountains
FL11 Everglades National Park-Research Center FL14 Quincy 21 Eastern Temperate Forests FL41 Verna Well Field 21 Eastern Temperate Forests FL99 Kennedy Space Center GA20 Bellville 19 Eastern Temperate Forests GA41 Georgia Station 21 Eastern Temperate Forests IA08 Big Springs Fish Hatchery IA23 McNay Research Center IA24 Great Plains ID03 Craters of the Moon National Monument ID11 Reynolds Creek Tropical Wet Forests 21 Eastern Temperate Forests 22 Eastern Temperate Forests 23 Eastern Temperate Forests 24 Great Plains 25 Northwestern Forested Mountains 26 Northwestern Forested Mountains	CO99	Mesa Verde National Park-Chapin Mesa	21	North American Deserts
FL14Quincy21Eastern Temperate ForestsFL41Verna Well Field21Eastern Temperate ForestsFL99Kennedy Space Center21Eastern Temperate ForestsGA20Bellville19Eastern Temperate ForestsGA41Georgia Station21Eastern Temperate ForestsIA08Big Springs Fish Hatchery20Eastern Temperate ForestsIA23McNay Research Center21Great PlainsID03Craters of the Moon National Monument21Northwestern Forested MountainsID11Reynolds Creek21North American Deserts	FL03	Bradford Forest	21	Eastern Temperate Forests
FL14Quincy21Eastern Temperate ForestsFL41Verna Well Field21Eastern Temperate ForestsFL99Kennedy Space Center21Eastern Temperate ForestsGA20Bellville19Eastern Temperate ForestsGA41Georgia Station21Eastern Temperate ForestsIA08Big Springs Fish Hatchery20Eastern Temperate ForestsIA23McNay Research Center21Great PlainsID03Craters of the Moon National Monument21Northwestern Forested MountainsID11Reynolds Creek21North American Deserts	FL11	Everglades National Park-Research Center	21	Tropical Wet Forests
FL41Verna Well Field21Eastern Temperate ForestsFL99Kennedy Space Center21Eastern Temperate ForestsGA20Bellville19Eastern Temperate ForestsGA41Georgia Station21Eastern Temperate ForestsIA08Big Springs Fish Hatchery20Eastern Temperate ForestsIA23McNay Research Center21Great PlainsID03Craters of the Moon National Monument21Northwestern Forested MountainsID11Reynolds Creek21North American Deserts	FL14		21	Eastern Temperate Forests
FL99Kennedy Space Center21Eastern Temperate ForestsGA20Bellville19Eastern Temperate ForestsGA41Georgia Station21Eastern Temperate ForestsIA08Big Springs Fish Hatchery20Eastern Temperate ForestsIA23McNay Research Center21Great PlainsID03Craters of the Moon National Monument21Northwestern Forested MountainsID11Reynolds Creek21North American Deserts	FL41		21	•
GA20Bellville19Eastern Temperate ForestsGA41Georgia Station21Eastern Temperate ForestsIA08Big Springs Fish Hatchery20Eastern Temperate ForestsIA23McNay Research Center21Great PlainsID03Craters of the Moon National Monument21Northwestern Forested MountainsID11Reynolds Creek21North American Deserts		Kennedy Space Center	_	
GA41Georgia Station21Eastern Temperate ForestsIA08Big Springs Fish Hatchery20Eastern Temperate ForestsIA23McNay Research Center21Great PlainsID03Craters of the Moon National Monument21Northwestern Forested MountainsID11Reynolds Creek21North American Deserts		Bellville	19	
IA08Big Springs Fish Hatchery20Eastern Temperate ForestsIA23McNay Research Center21Great PlainsID03Craters of the Moon National Monument21Northwestern Forested MountainsID11Reynolds Creek21North American Deserts		Georgia Station	21	•
IA23McNay Research Center21Great PlainsID03Craters of the Moon National Monument21Northwestern Forested MountainsID11Reynolds Creek21North American Deserts				i
ID03Craters of the Moon National Monument21Northwestern Forested MountainsID11Reynolds Creek21North American Deserts		<u>U I U I</u>		•
ID11 Reynolds Creek 21 North American Deserts				
	IL11	Bondville	21	Eastern Temperate Forests

IL18	Shabbona	21	Eastern Temperate Forests
IL63	Dixon Springs Agricultural Center	21	Eastern Temperate Forests
IL78	Monmouth	21	Eastern Temperate Forests
IN20	Roush Lake	21	Eastern Temperate Forests
IN22	Southwest Purdue Agriculture Center	21	Eastern Temperate Forests
IN34	Indiana Dunes National Lakeshore	21	Eastern Temperate Forests
IN41	Agronomy Center for Research and Extension	21	Eastern Temperate Forests
KS07	Farlington Fish Hatchery	21	Great Plains
KS31	Konza Prairie	21	Great Plains
KS32	Lake Scott State Park	21	Great Plains
KY03	Mackville	21	Eastern Temperate Forests
KY22	Lilley Cornett Woods	21	Eastern Temperate Forests
KY35	Clark State Fish Hatchery	21	Eastern Temperate Forests
LA12	Iberia Research Station	20	Eastern Temperate Forests
LA30	Southeast Research Station	21	Eastern Temperate Forests
MA01	North Atlantic Coastal Lab	21	Eastern Temperate Forests
MA08	Quabbin Reservoir	21	Eastern Temperate Forests
MA13	East	20	Eastern Temperate Forests
MD13	Wye	21	Eastern Temperate Forests
ME00	Caribou	20	Eastern Temperate Forests
ME02	Bridgton	21	Northern Forests
ME09	Greenville Station	21	Northern Forests
ME98	Acadia National Park-McFarland Hill	21	Northern Forests
MI09	Douglas Lake	21	Northern Forests
MI26	Kellogg Biological Station	20	Eastern Temperate Forests
MI53	Wellston	21	Northern Forests
MI98	Raco	20	Northern Forests
MI99	Chassell	21	Northern Forests
MN16	Marcell Experimental Forest	21	Northern Forests
MN18	Fernberg	21	Northern Forests
MN23	Camp Ripley	21	Northern Forests
MN27	Lamberton	21	Great Plains
MO03	Ashland Wildlife Area	20	Eastern Temperate Forests
MO05	University Forest	21	Eastern Temperate Forests
MS10	Clinton	21	Eastern Temperate Forests
MS19	Newton	21	Eastern Temperate Forests
MS30	Coffeeville	21	Eastern Temperate Forests
MT00	Little Bighorn Battlefield National Monument	21	Great Plains
MT05	Glacier National Park-Fire Weather Station	21	Northwestern Forested Mountains
MT07	Clancy	21	Northwestern Forested Mountains
MT97	Lost Trail Pass	20	Northwestern Forested Mountains
MT98	Havre - Northern Agricultural Research Center	21	Great Plains
NC03	Lewiston	21	Eastern Temperate Forests
NC25	Coweeta	21	Eastern Temperate Forests
NC34	Piedmont Research Station	21	Eastern Temperate Forests
NC35	Clinton Crops Research Station	21	Eastern Temperate Forests
NC36	Jordan Creek	21	Eastern Temperate Forests
NC41	Finley Farm	21	Eastern Temperate Forests
ND08	Icelandic State Park	21	Great Plains
1,1000	TOTALIGIO DIMIO I MIN	1	

ND11	Woodworth	21	Great Plains
NE15	Mead	21	Great Plains Great Plains
NE99	North Platte Agricultural Experiment Station	21	Great Plains Great Plains
NH02	Hubbard Brook	21	Northern Forests
NJ99	Washington Crossing	21	Eastern Temperate Forests
NM01	Gila Cliff Dwellings National Monument	20	Temperate Sierras
NM07	Bandelier National Monument	21	Northwestern Forested Mountains
NM08	Mayhill	20	Temperate Sierras
NM12	Capulin Volcano National Monument	21	Great Plains
NV03	Smith Valley	21	North American Deserts
NV05	Great Basin National Park-Lehman Caves	21	North American Deserts
NY08	Aurora Research Farm	21	Eastern Temperate Forests
NY10	Chautauqua	20	Eastern Temperate Forests
NY20	Huntington Wildlife	21	Eastern Temperate Forests
NY52	Bennett Bridge	21	Eastern Temperate Forests
NY68	Biscuit Brook	21	Eastern Temperate Forests
NY98	Whiteface Mountain	21	Eastern Temperate Forests
NY99	West Point	21	Northern Forests
OH09	Oxford	21	Eastern Temperate Forests
OH17	Delaware	21	Eastern Temperate Forests
OH49	Caldwell	21	Eastern Temperate Forests Eastern Temperate Forests
OH49	Wooster	21	Eastern Temperate Forests Eastern Temperate Forests
OK00	Salt Plains National Wildlife Refuge	21	Great Plains
OK17		19	Great Plains Great Plains
OK17	Kessler Farm Field Laboratory	20	Great Plains Great Plains
	Goodwell Research Station	18	
OR02	Alsea Guard Ranger Station	20	Marine West Coast Forest
OR09	Silver Lake Ranger Station	21	Northwestern Forested Mountains
OR10	H. J. Andrews Experimental Forest	21	Northwestern Forested Mountains
OR18	Starkey Experimental Forest		Northwestern Forested Mountains
OR97	Hyslop Farm	21	Marine West Coast Forest
PA15	Penn State	21	Eastern Temperate Forests
PA29	Kane Experimental Forest		Eastern Temperate Forests
PA42	Leading Ridge	21	Eastern Temperate Forests
PA72	Milford	21	Eastern Temperate Forests
SC06	Santee National Wildlife Refuge	21	Eastern Temperate Forests
SD08	Cottonwood	21	Great Plains
SD99	Huron Well Field	21	Great Plains
TN00	Walker Branch Watershed	21	Eastern Temperate Forests
TN11	Great Smoky Mountains National Park-Elkmont	21	Eastern Temperate Forests
TN14	Hatchie National Wildlife Refuge	21	Eastern Temperate Forests
TX02	Muleshoe National Wildlife Refuge	19	Great Plains
TX03	Beeville	21	Eastern Temperate Forests
TX04	Big Bend National Park - K-Bar	21	North American Deserts
TX10	Attwater Prairie Chicken National Wildlife	21	Casad Dising
TX10	Refuge	21	Great Plains
TX16	Sonora	21	Great Plains
TX21	Longview	21	Eastern Temperate Forests
TWO	Guadalupe Mountains National Park Frijole	21	North American D
TX22	Ranger Station	21	North American Deserts

TX56	L.B.J. National Grasslands	21	Great Plains
UT01	Logan	21	North American Deserts
UT08	Murphy Ridge	21	North American Deserts
UT98	Green River	21	North American Deserts
UT99	Bryce Canyon National Park-Repeater Hill	21	North American Deserts
VA00	Charlottesville	21	Eastern Temperate Forests
VA13	Hortons Station	21	Eastern Temperate Forests
VA28	Shenandoah National Park-Big Meadows	21	Eastern Temperate Forests
VT01	Bennington	21	Northern Forests
VT99	Underhill	21	Northern Forests
WA14	Olympic National Park-Hoh Ranger Station	20	Marine West Coast Forest
	North Cascades National Park-Marblemount		
WA19	Ranger Station	21	Northwestern Forested Mountains
WA21	La Grande	21	Northwestern Forested Mountains
WA24	Palouse Conservation Farm	21	North American Deserts
WI09	Popple River	20	Northern Forests
WI25	Suring	21	Northern Forests
WI28	Lake Dubay	21	Eastern Temperate Forests
WI36	Trout Lake	21	Northern Forests
WI37	Spooner	21	Northern Forests
WI98	Wildcat Mountain	21	Eastern Temperate Forests
WI99	Lake Geneva	21	Eastern Temperate Forests
WV04	Babcock State Park	21	Eastern Temperate Forests
WV18	Parsons	21	Eastern Temperate Forests
WY00	Snowy Range	21	Northwestern Forested Mountains
WY02	Sinks Canyon	21	North American Deserts
WY06	Pinedale	21	Northwestern Forested Mountains
WY08	Yellowstone National Park-Tower Falls	21	Northwestern Forested Mountains
WY95	Brooklyn Lake	18	Northwestern Forested Mountains
WY97	South Pass City	20	Northwestern Forested Mountains
WY98	Gypsum Creek	21	North American Deserts
WY99	Newcastle	21	Great Plains

Table S3. The normalized mean bias (NMB, %) between the model and the NADP sites from 2002 to 2006 from Appel et al. (2011) and this study including both precipitation adjustment and without precipitation adjustment and with.

		TNO ₃	NH_X	TSO _X
East	Appel et al., 2011	-21.9	-15.2	0.8
	No adjustment	-37.0	-33.4	-8.7
	Annual Precip-adjust	-39.6	-36.5	-12.0
West	Appel et al., 2011	-7.6	-15.7	18.9
	No adjustment	-23.0	-30.3	48.1
	Annual Precip-adjust	-22.3	-31.7	58.5

Table S4. The trends for the wet deposition (WDEP, units of kg N ha⁻¹ yr⁻¹ for nitrogen deposition including TNO₃, NH_X and TIN, and kg S ha⁻¹ yr⁻¹ for TSO_X) over the ten ecoregions. The bolded values mean the trends are statistically significant with the P value less than 0.05 for the Student's t test.

ID	Regions Name	TNO ₃	NH_X	TIN	TSO ₄
5	Northern Forests	-0.036	-0.002	-0.037	-0.088
6	Northwestern Forested Mountains	-0.006	0.002	-0.004	-0.008
7	Marine West Coast Forest	-0.002	0.007	0.005	0.005
8	Eastern Temperate Forests	-0.065	-0.005	-0.070	-0.18
9	Great Plains	-0.022	-0.001	-0.023	-0.037
10	North American Deserts	-0.007	0.00	-0.007	-0.013
11	Mediterranean California	-0.006	0.00	-0.006	0.002
12	Southern Semi-arid Highlands	-0.014	-0.007	-0.021	-0.049
13	Temperate Sierras	-0.011	-0.001	-0.012	-0.034
15	Tropical Wet Forests	-0.023	0.011	-0.012	-0.036

Table S5. The same as Table S4 but for dry deposition (DDEP, units of kg N ha⁻¹ yr⁻¹ for nitrogen deposition including TNO_3 , NH_X and TIN, and kg S ha⁻¹ yr⁻¹ for TSO_X) over the ten ecoregions.

ID	Regions Name	TNO ₃	NH_X	TIN	TSO ₄
5	Northern Forests	-0.051	0.018	-0.033	-0.15
6	Northwestern Forested Mountains	-0.007	0.009	0.002	-0.013
7	Marine West Coast Forest	-0.016	-0.005	-0.022	-0.058
8	Eastern Temperate Forests	-0.088	0.039	-0.049	-0.33
9	Great Plains	-0.019	0.045	0.026	-0.045
10	North American Deserts	-0.009	0.009	-0.001	-0.011
11	Mediterranean California	-0.045	0.012	-0.032	-0.016
12	Southern Semi-arid Highlands	0.001	0.009	0.009	-0.025
13	Temperate Sierras	-0.005	0.010	0.005	-0.02
15	Tropical Wet Forests	-0.004	0.030	0.027	-0.019