



*Supplement of*

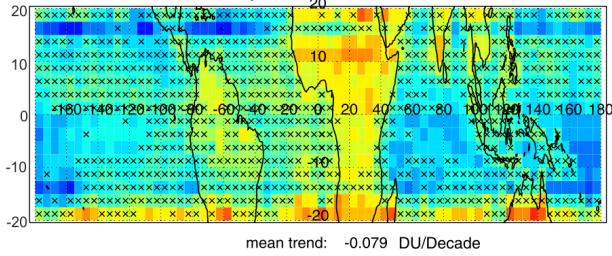
## **Harmonisation and trends of 20-year tropical tropospheric ozone data**

**Elpida Leventidou et al.**

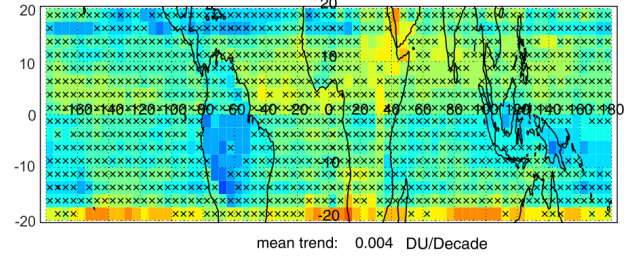
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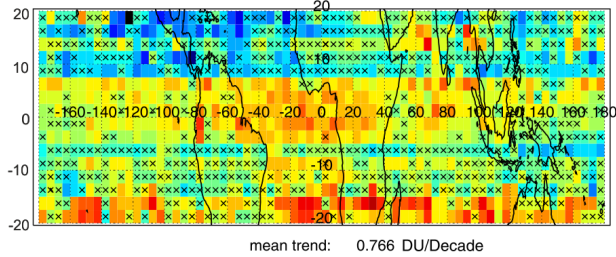
S1) no correction for GOME  
and lat-lon dependent offset for GOME-2



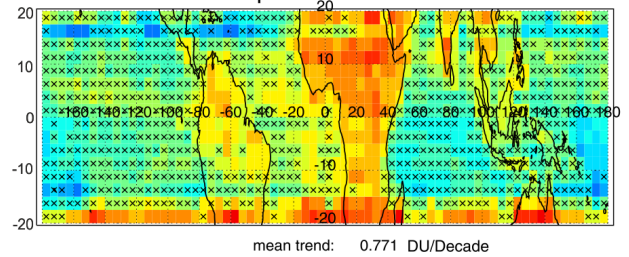
S2) no correction for GOME and global offset for GOME-2



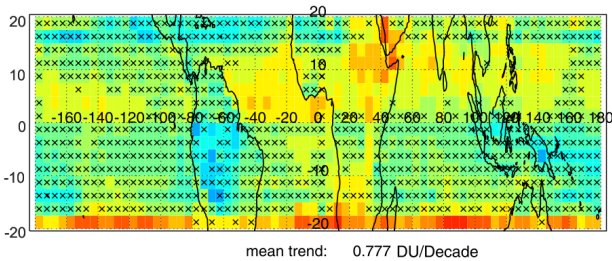
S3) lat-lon dependent offset for GOME and GOME-2



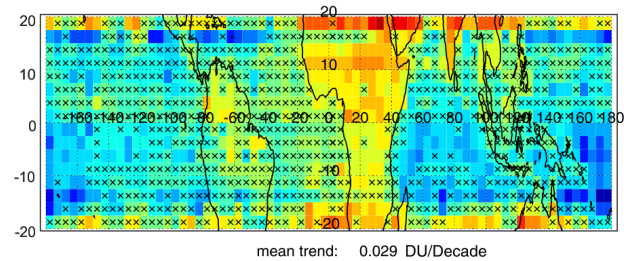
S4) global offset for GOME  
and lat-lon dependent offset for GOME-2



S5) global offset for GOME and GOME-2



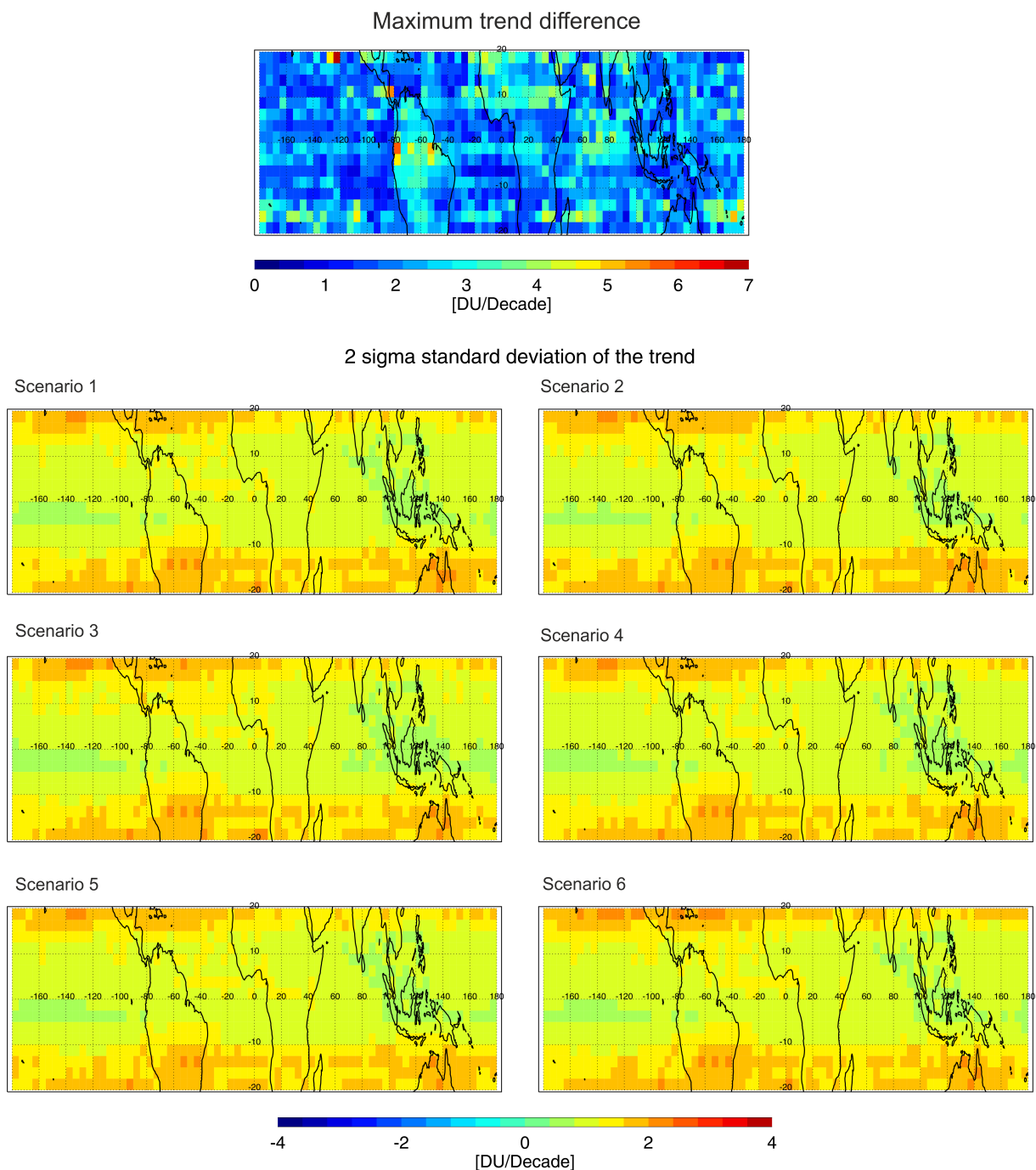
S6) no correction for GOME and drifted offset for GOME-2



x denotes statistically non-significant trend ( $b/\text{sig}_{ab} < 2$ )



**Figure 1.** Tropical tropospheric ozone trends using a linear multivariate first order auto-regression model for 6 harmonisation scenarios, see Sec. 2. S1) The trend model is applied to a harmonised dataset using no correction for GOME data, while GOME-2 data are corrected for each grid-box adding the mean bias with respect SCIAMACHY. This is the preferred harmonisation scenario. S2) No correction is applied to GOME data and the average bias with respect SCIAMACHY, equal to -5.7 DU, is added to all GOME-2 TCO data. S3) GOME and GOME-2 have been corrected using for each grid-box the mean bias with respect SCIAMACHY. S4) The average bias with respect SCIAMACHY, equal to -1.2 DU, is added to all GOME TCO data, whereas GOME-2 TCO has been corrected using for each grid-box the mean bias with respect SCIAMACHY. S5) The average bias with SCIAMACHY, equal to -1.2 DU for GOME and -5.7 for GOME-2, is added to all GOME and GOME-2 TCO data. S6) No correction applied to GOME, whereas for GOME-2 the drift of the bias is also included in the correction of each GOME-2 TCO grid-box. The trends are given in DU per decade. Grid-boxes marked with "x" are statistically non-significant at the 95% confidence level.



**Figure 2.** (top) Maximum trend difference among all six harmonisation scenarios. (bottom) The  $2\sigma$  uncertainty of the trend using six harmonisation scenarios.