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Date: 19 December 2011

# Suppliment for The effect of a tropical island on regional transport of aerosol

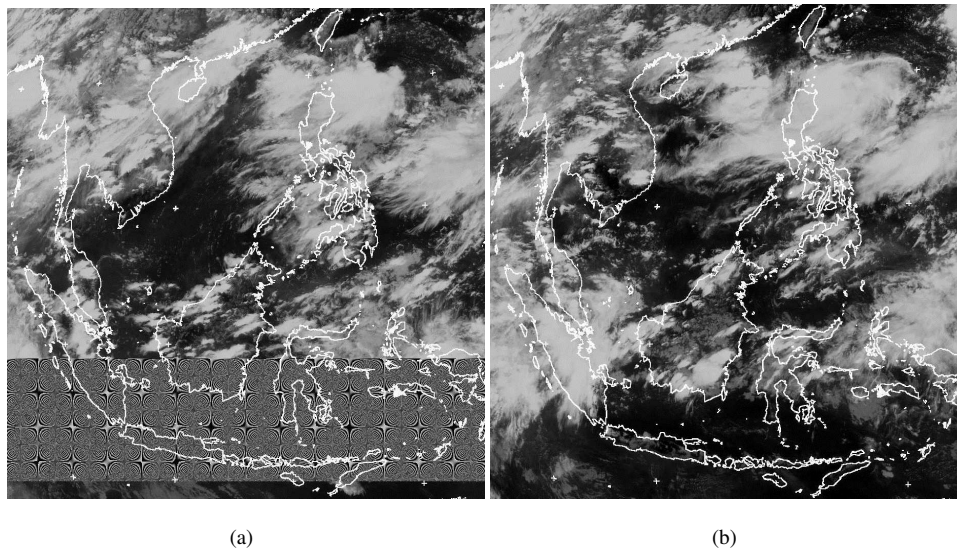
immediate

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(hugh.coe@manchester.ac.uk)

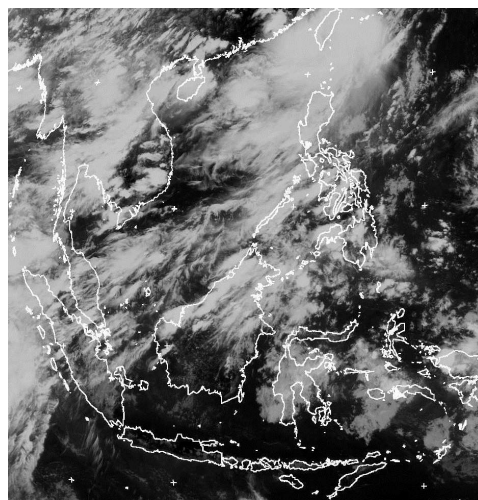
## 1 Introduction

This supplement details the satellite photos that were not included in the main text, and all the profiles used in averages. Profiles that were not performed over a small constrained area (usually due to flight control restrictions) were rejected. It should be noted that some profiles were recorded on a lower time resolution (30 s rather than the usual 10 s) due to restrictions switching instrument modes. All times are middle points of profiles in local time (UTC+8).

## 2 MT-SAT thermal infra-red images



**Fig. 1.** Thermal infra-red images from the Multi-Functional Transport Satellite (MT-SAT), operated by the Japanese Meteorological Agency (JMA) and provided by the National Environmental Research Council (NERC) Earth Observation and Data Acquisition and Analysis Service (NEODAAS). (a) 13/07/08 and (b) 14/07/08, both at 5 pm. Both images show few clouds immediately upwind (to the south east) of Borneo, with clouds forming over land, particularly downwind of the Crocker Mountain range. (Erroneous data at the south of (a))



**Fig. 2.** Thermal infra-red image from the Multi-Functional Transport Satellite (MT-SAT), operated by the Japanese Meteorological Agency (JMA) and provided by the National Environmental Research Council (NERC) Earth Observation and Data Acquisition and Analysis Service (NEODAAS). 17/07/08 at 5 pm. There is little difference in cloud cover over land and sea. Cloud is associated with a MCS to the north east of Borneo.

### 3 Upwind profiles

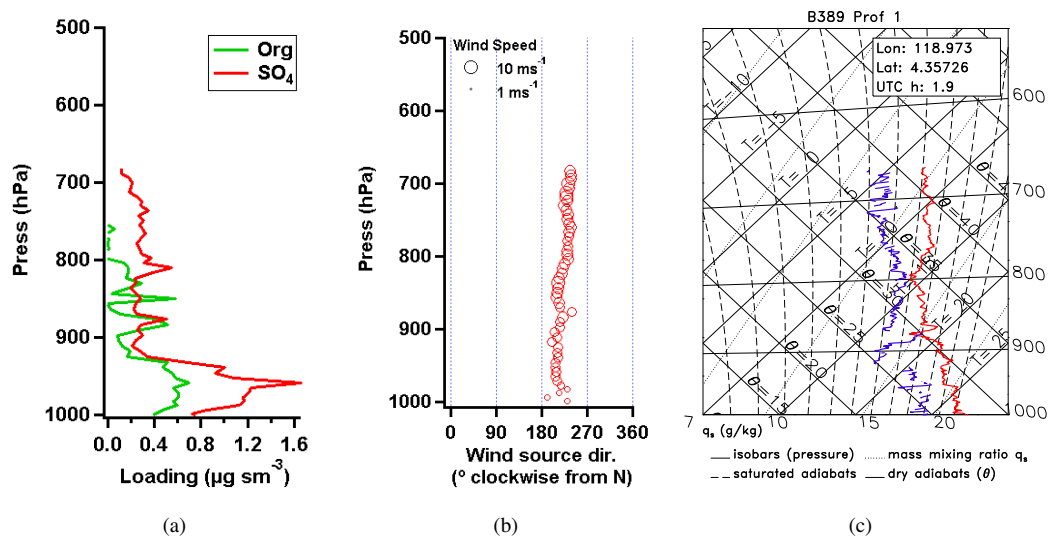


Fig. 3. Upwind marine profile. Flight B389a, 17/07/2008 09:55.

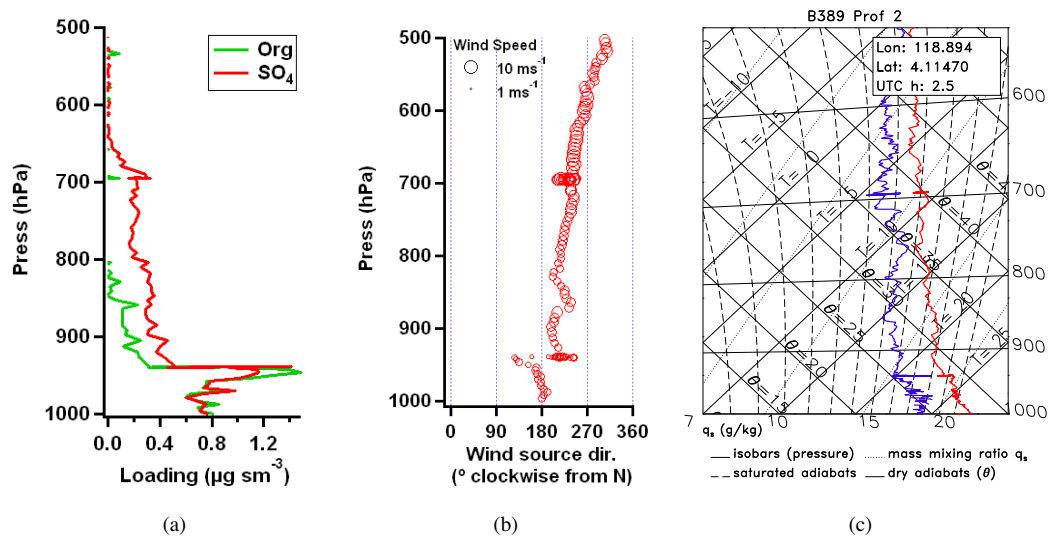


Fig. 4. Upwind marine profile. Flight B389a, 17/07/08, 10:30.

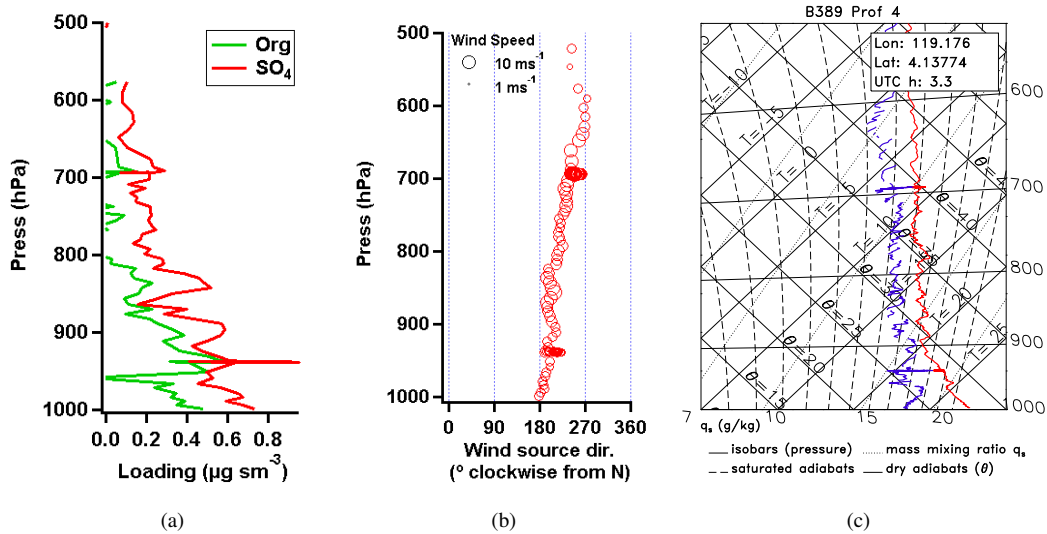


Fig. 5. Upwind marine profile. Flight B389a, 17/07/2008 11:19. Precipitation observed in the boundary layer which may have depleted aerosol concentrations.

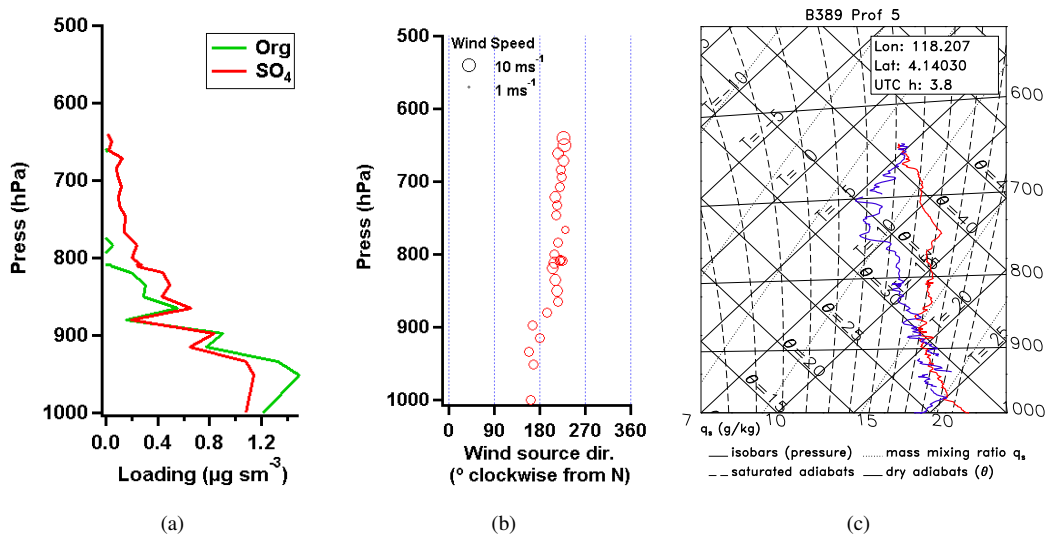


Fig. 6. Upwind marine profile. Flight B389a, 17/07/2008 11:52.

## 4 East Sabah Profiles

### 4.1 Morning

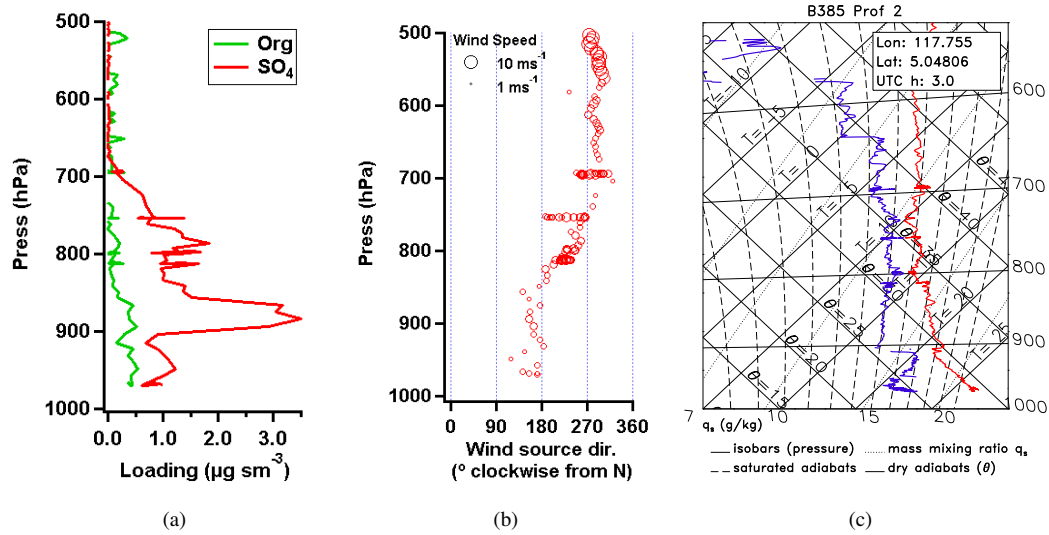


Fig. 7. East Sabah morning profile. Flight B385a, 11/07/2008 11:01.

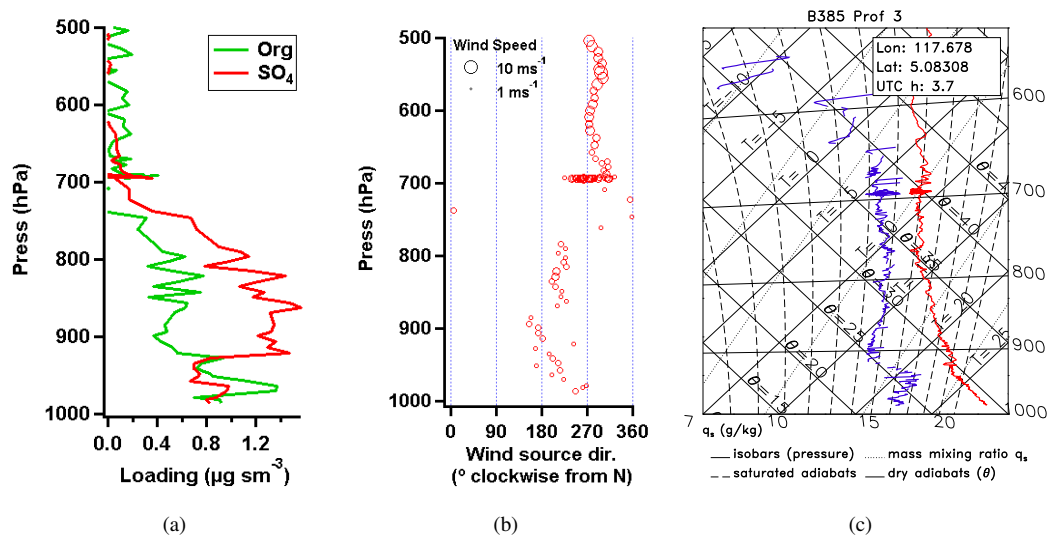


Fig. 8. East Sabah morning profile. Flight B385a, 11/07/2008 11:46.

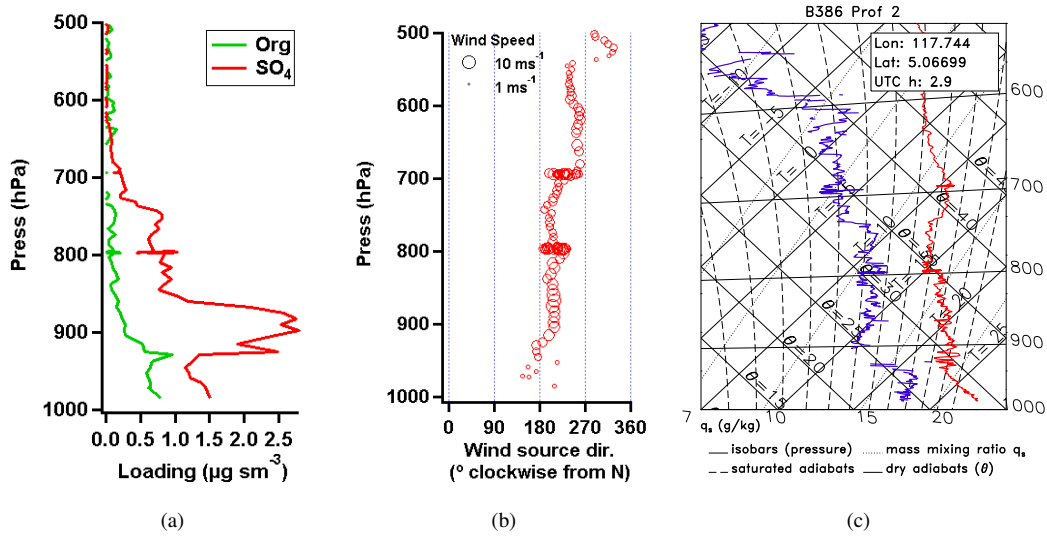


Fig. 9. East Sabah morning profile. Flight B386a, 13/07/2008 10:54.

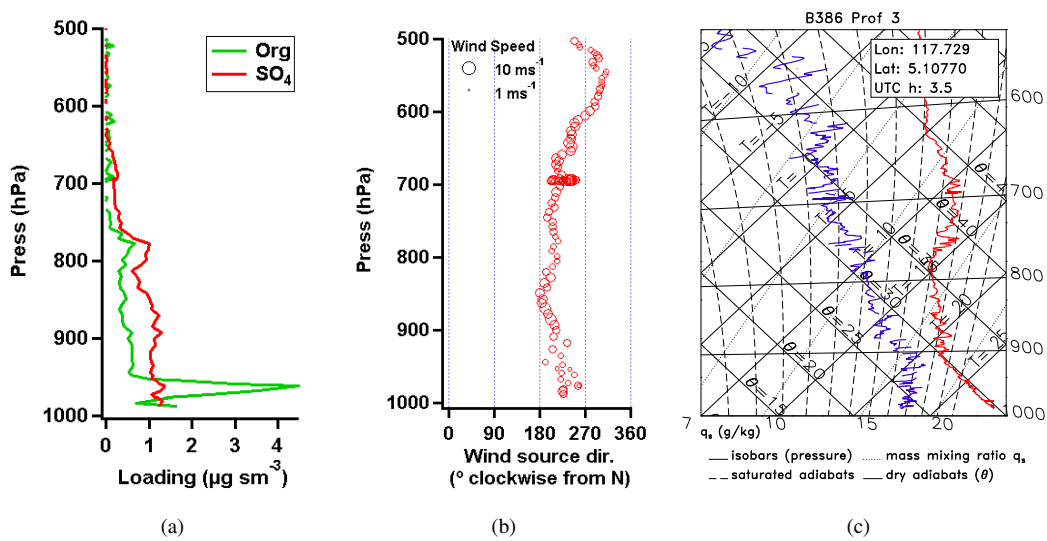


Fig. 10. East Sabah morning profile. Flight B386a 13/07/2008 11:35.

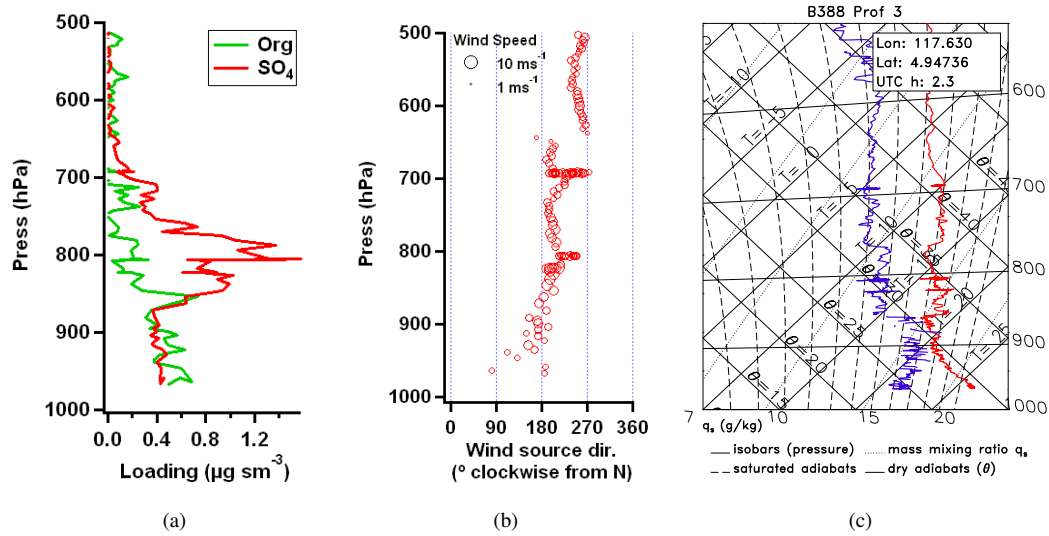


Fig. 11. East Sabah morning profile. B388, 16/07/08, 10:30.

## 4.2 Afternoon

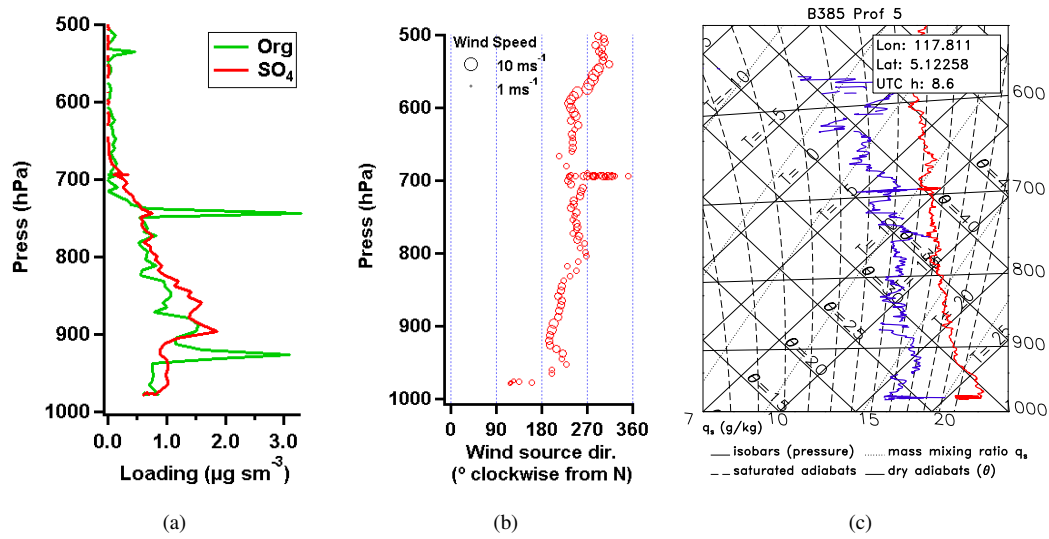


Fig. 12. East Sabah afternoon profile. Flight B385b, 11/07/2008 16:37.

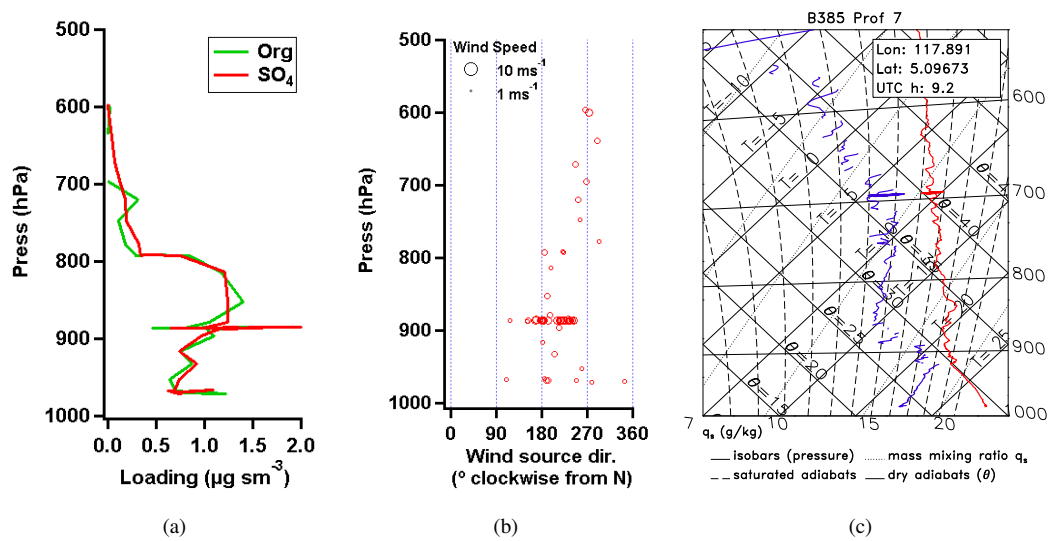


Fig. 13. East Sabah afternoon profile. Flight B385b, 11/07/2008 17:11.



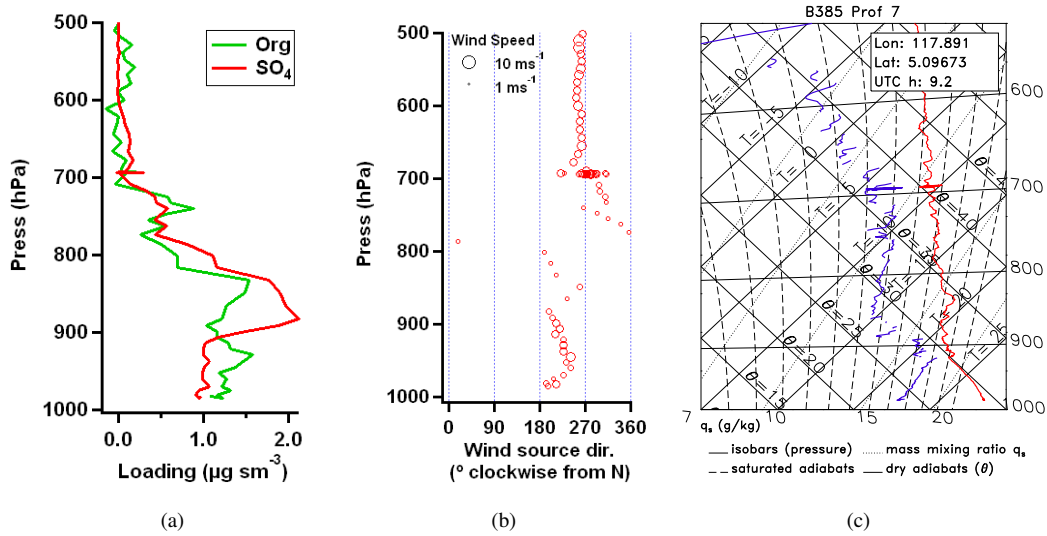


Fig. 14. East Sabah afternoon profile. Flight B385b, 11/07/08, 17:58.

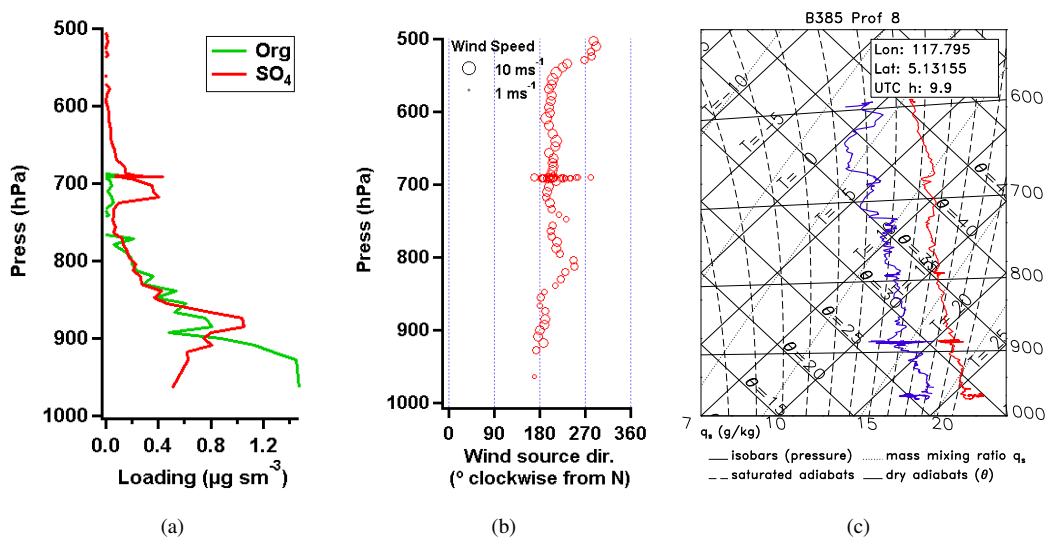
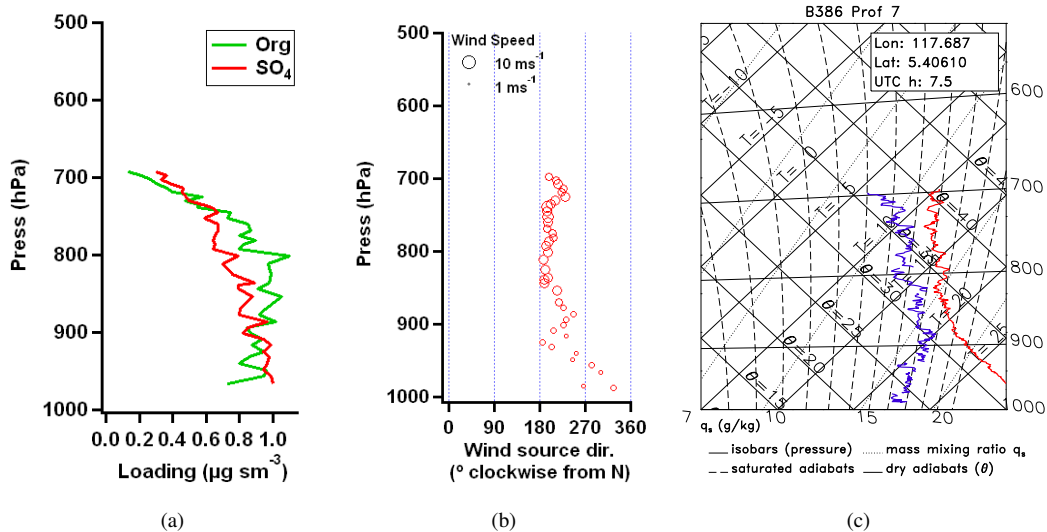
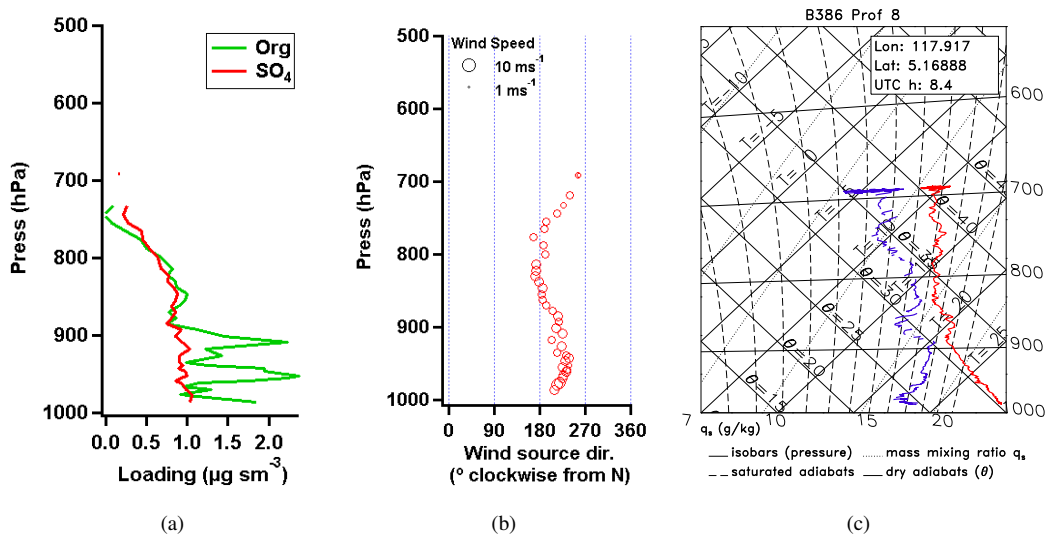


Fig. 15. East Sabah afternoon SO profile. Flight B389b, 16/07/2008 15:38.



**Fig. 16.** East Sabah afternoon profile. B386a, 13/07/08, 15:30. Performed during a period of cumulonimbus activity.



**Fig. 17.** East Sabah afternoon profile. Flight B386a, 13/07/2008 16:32. Performed during a period of cumulonimbus activity.

## 5 Kota Kinabalu Profiles

### 5.1 Morning

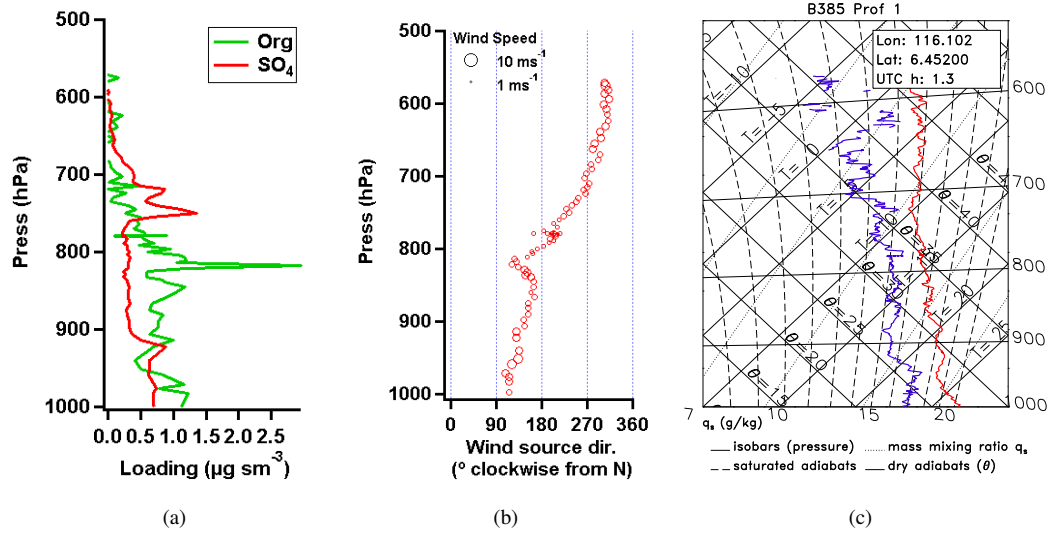


Fig. 18. East Sabah afternoon profile. B385a, 11/07/2008 09:17.

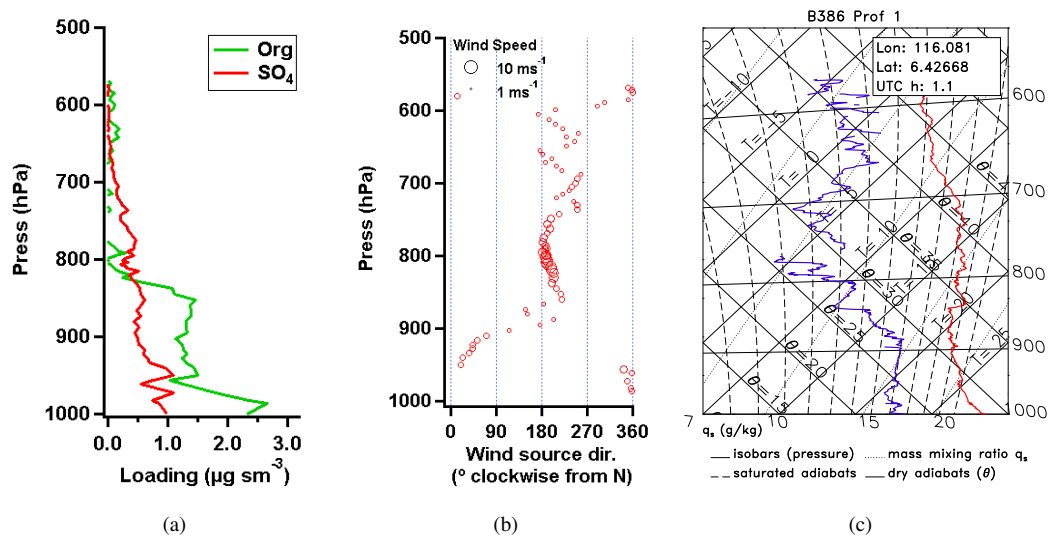


Fig. 19. Kota Kinabalu morning profile. B386a, 13/07/2008 09:10.

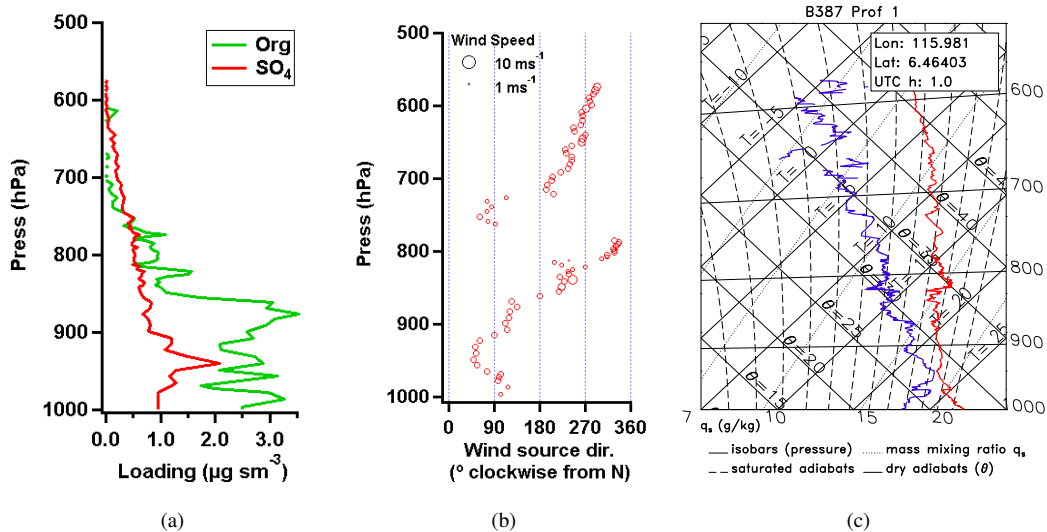


Fig. 20. Kota Kinabalu morning profile. B387a, 14/07/2008 09:03.

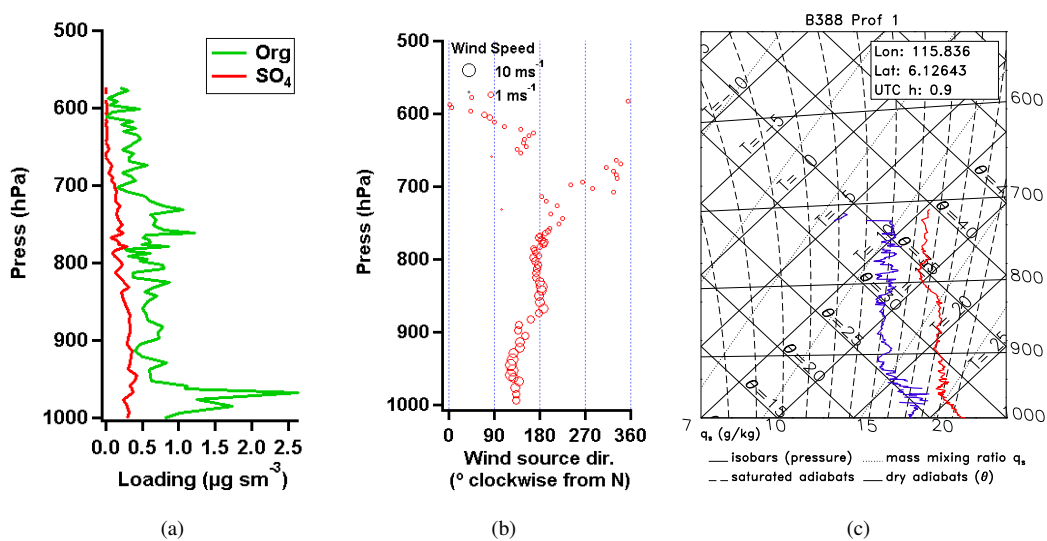


Fig. 21. Kota Kinabalu morning profile. B388a, 16/07/2008 08:52.

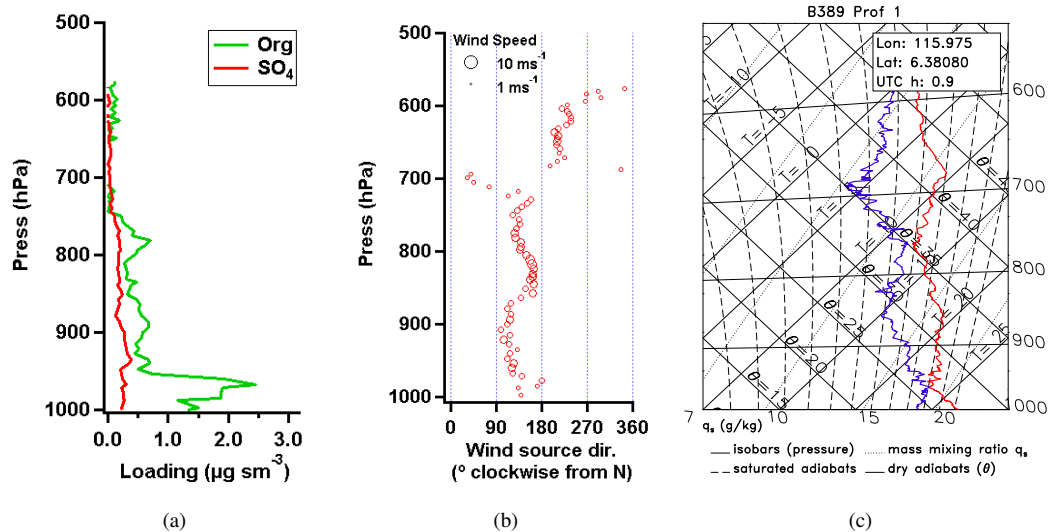


Fig. 22. Kota Kinabalu morning profile. B389a, 17/07/2008 08:56.

## 5.2 Around Midday

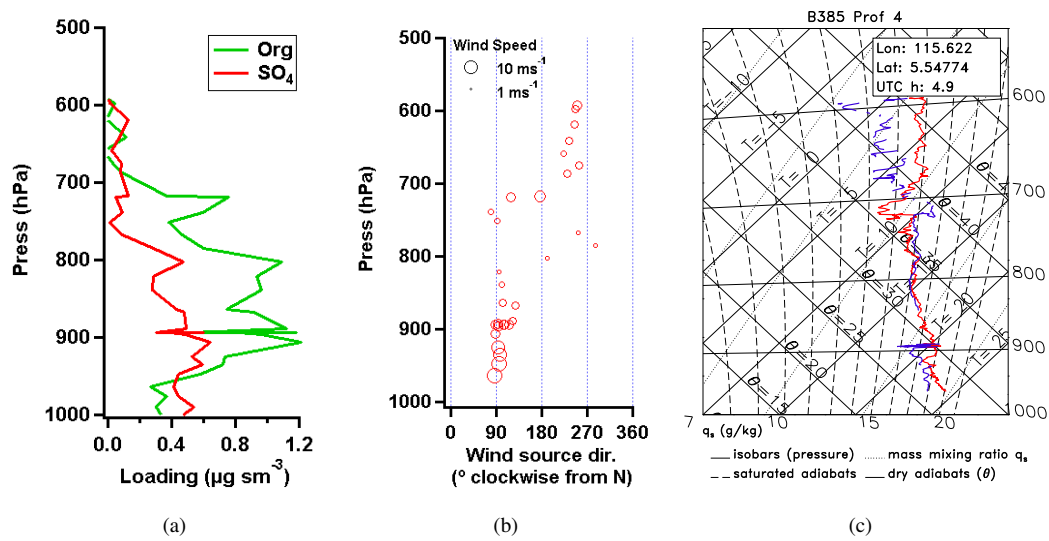


Fig. 23. Kota Kinabalu around midday profile. B385a, 11/07/2008 12:56.

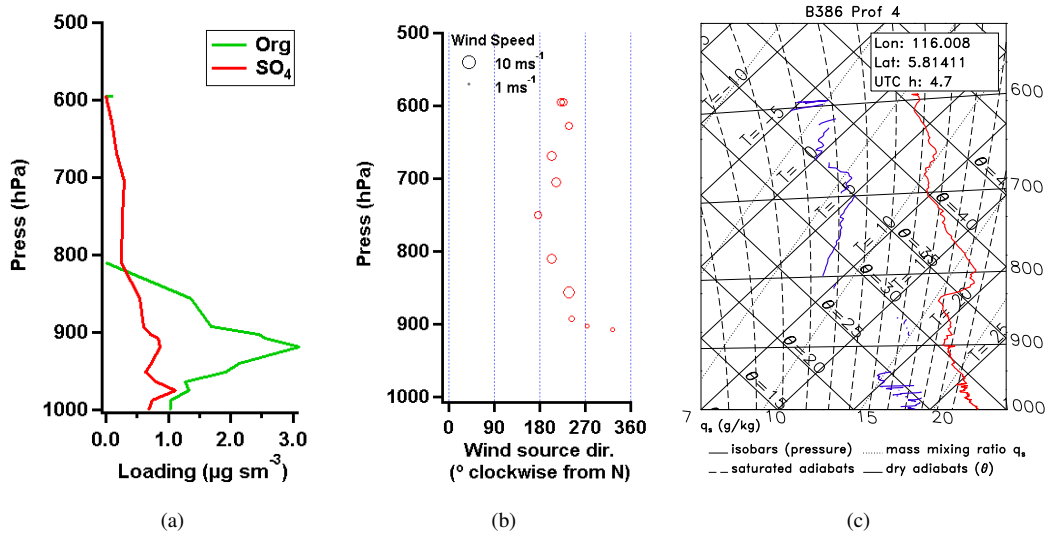


Fig. 24. Kota Kinabalu around midday profile. B386a, 13/07/2008 12:44.

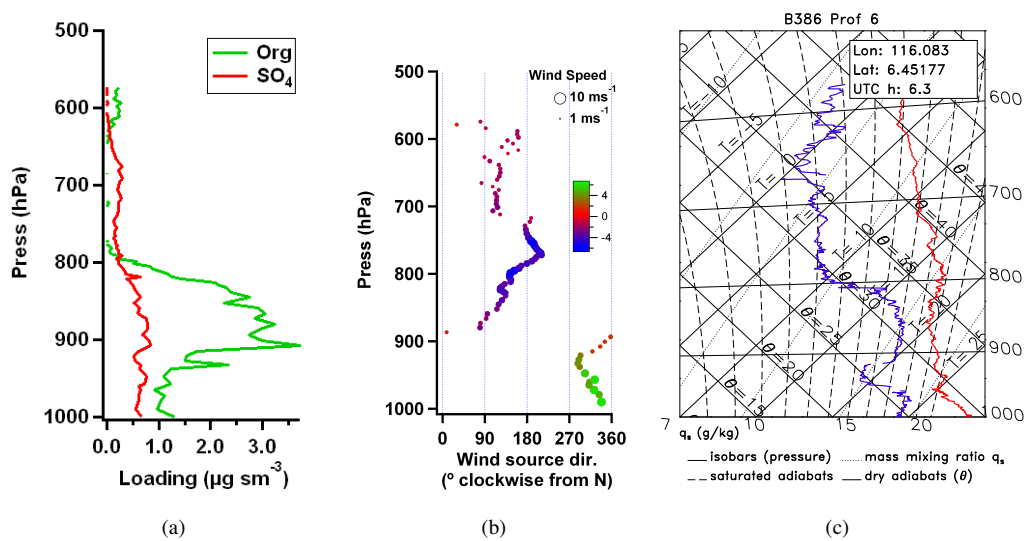


Fig. 25. Kota Kinabalu around midday profile. B386b, 13/07/08, 14:20.

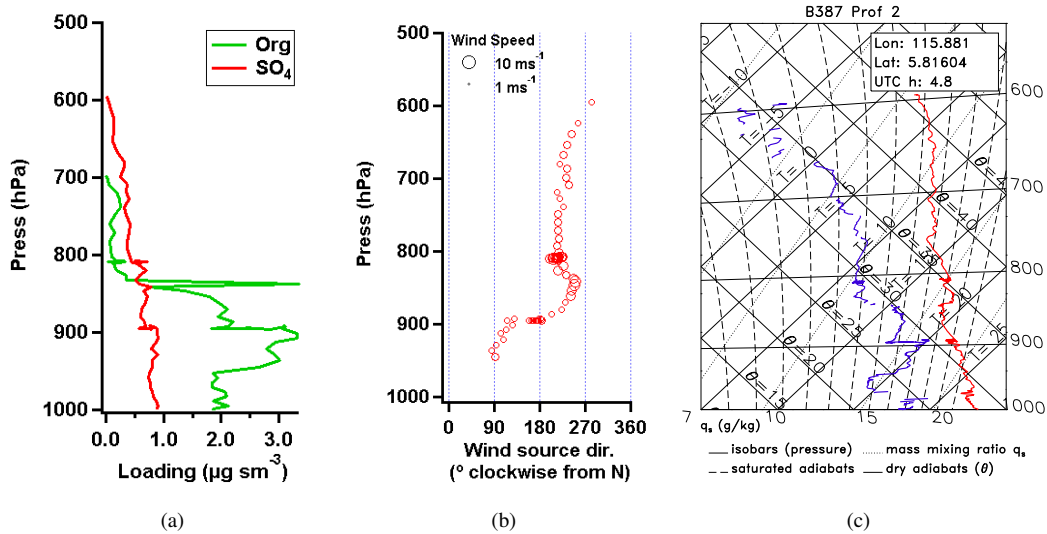


Fig. 26. Kota Kinabalu around midday profile. B387a, 14/07/2008 12:53.

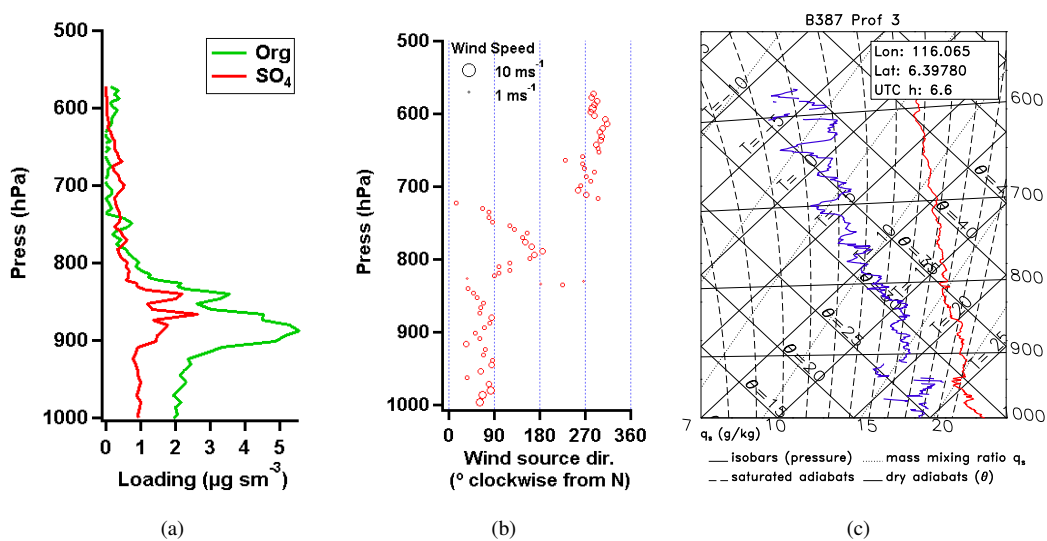


Fig. 27. Kota Kinabalu around midday profile. B387b, 14/07/2008 14:37.



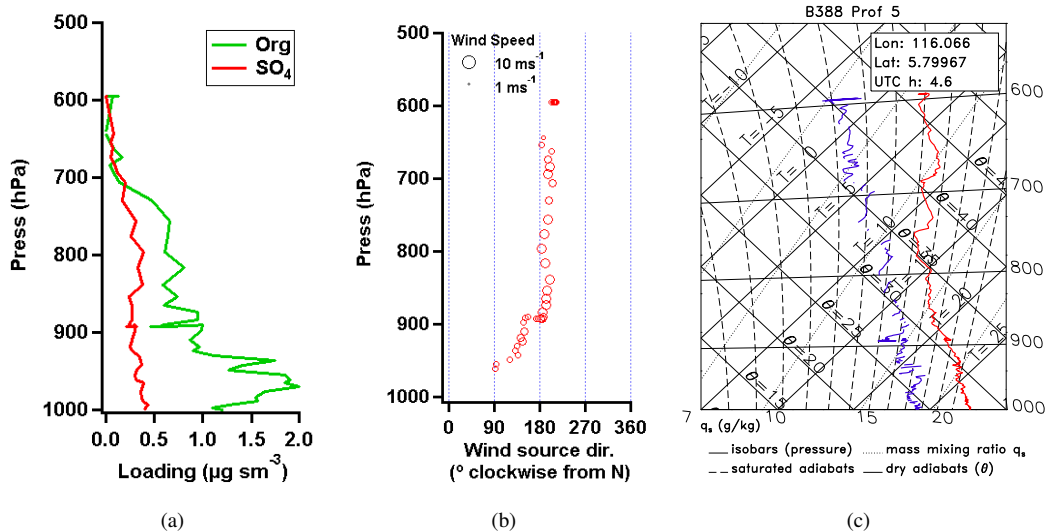


Fig. 28. Kota Kinabalu around midday profile. B388a, 16/07/2008 12:38.

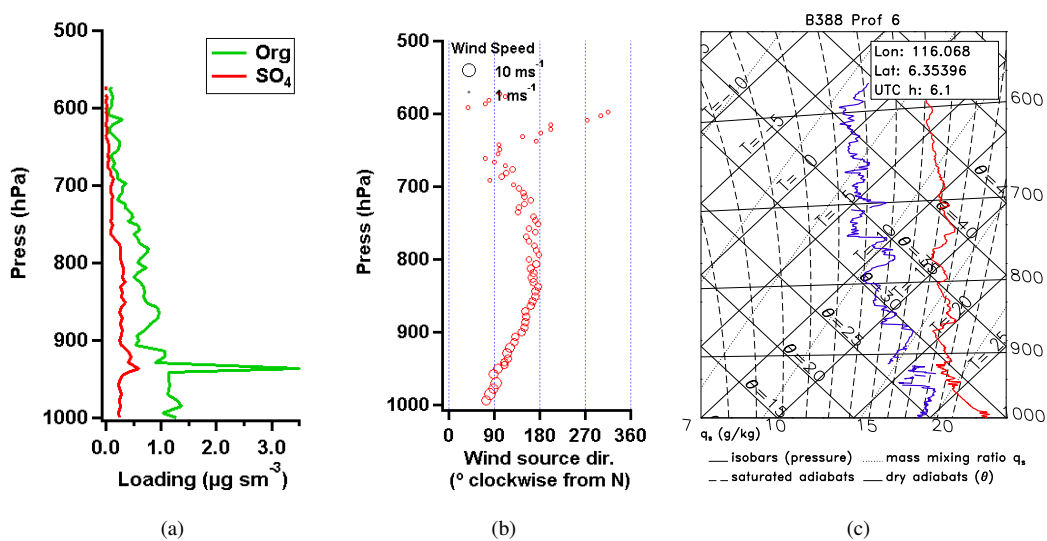


Fig. 29. Kota Kinabalu around midday profile. B388b, 16/07/2008 14:07.

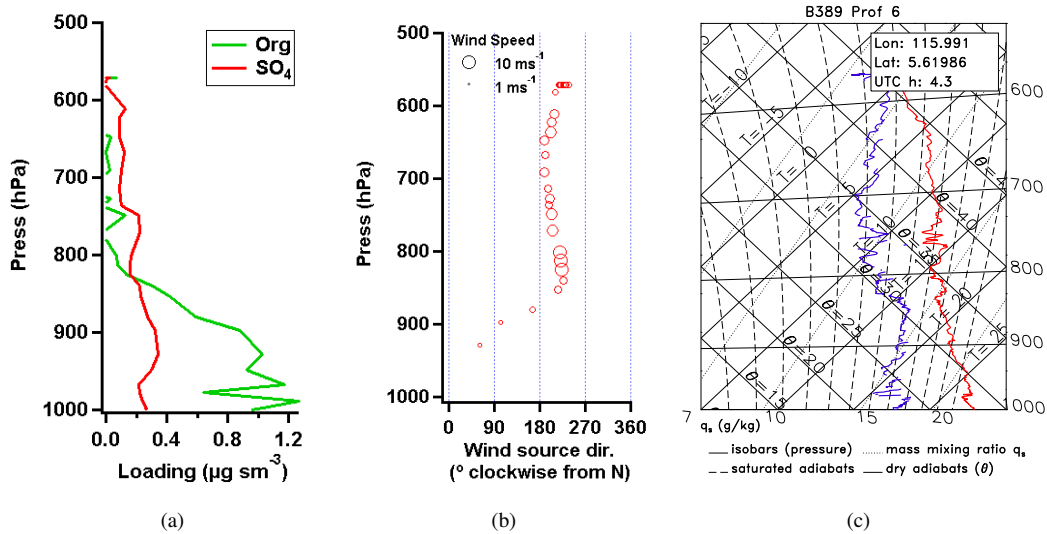


Fig. 30. Kota Kinabalu around midday profile. B389a, 17/07/2008 12:23.

### 5.3 Late Afternoon

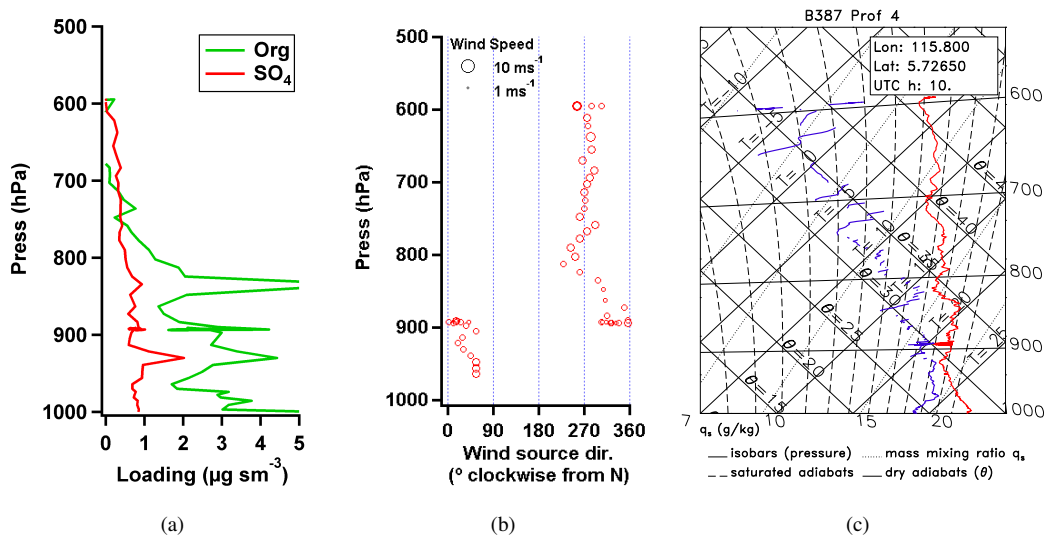


Fig. 31. Kota Kinabalu late afternoon profile. B387b, 14/07/2008 18:02.

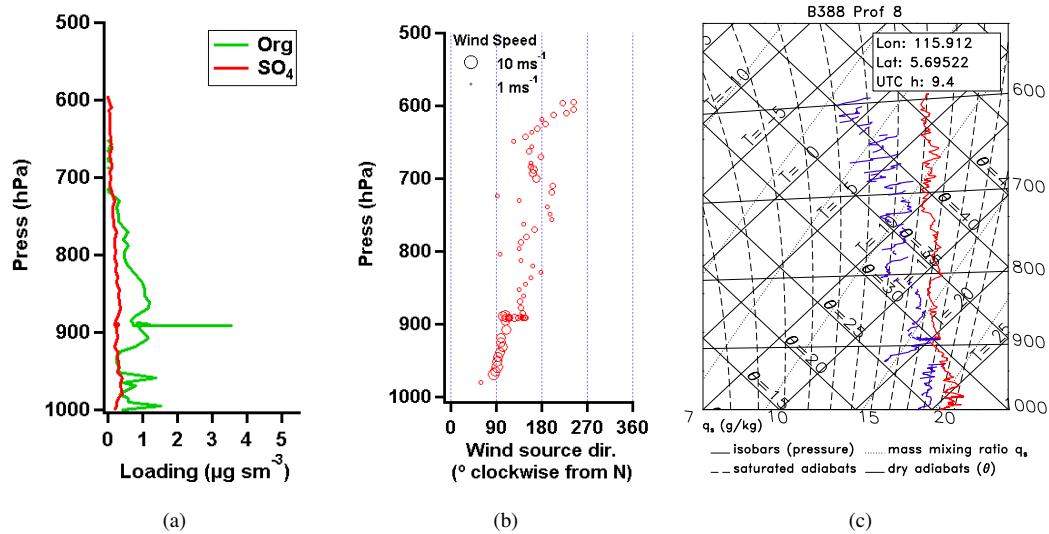


Fig. 32. Kota Kinabalu late afternoon profile. B388b, 16/07/2008 17:26.