

GIFTS/IOMI Suspended Particulates Detection and Quantification

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Objectives:

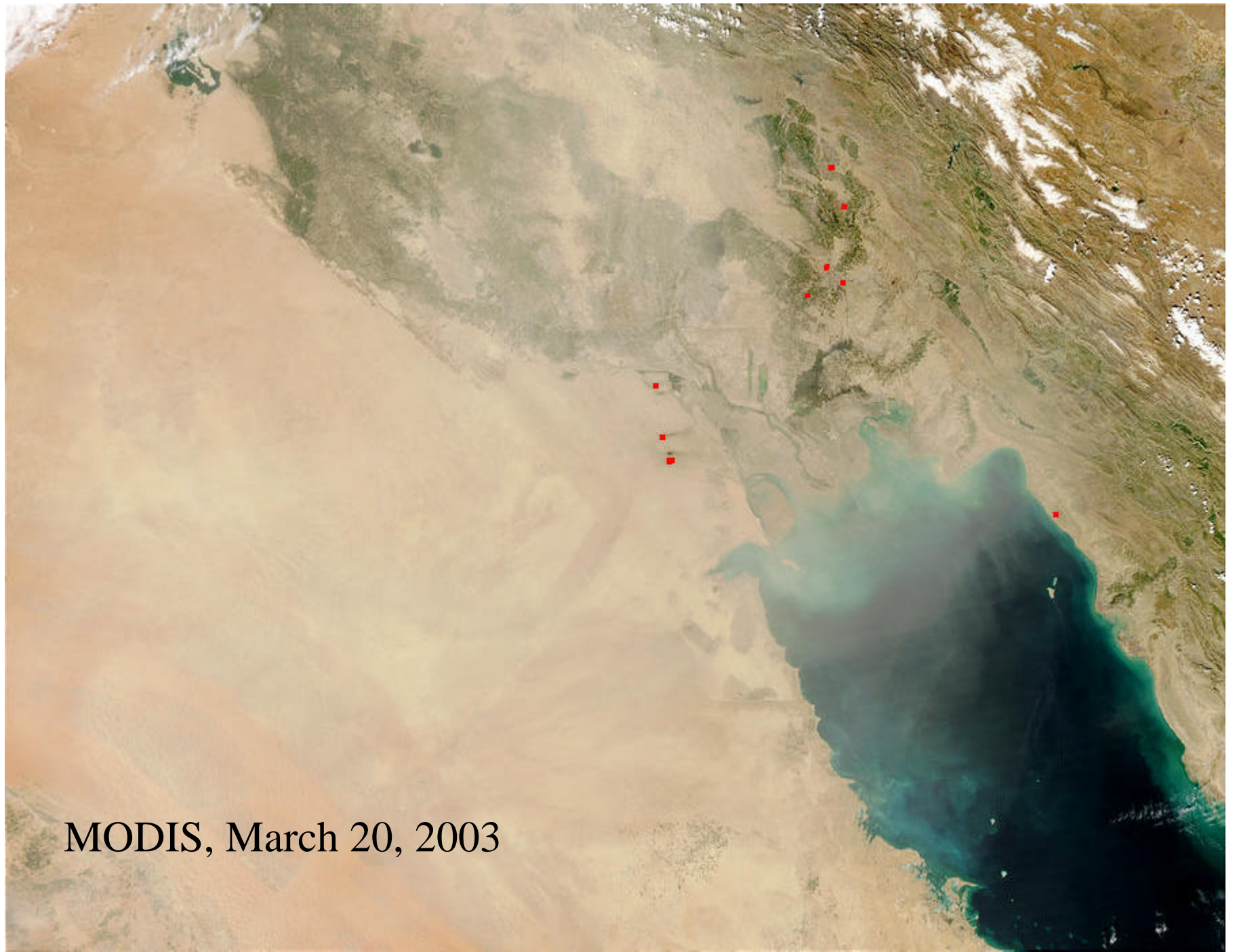
The objective of this work is to detect the presence of suspended matter such as dust, sand, volcanic ash, or smoke, especially near the surface and in the boundary layer. Detection of suspended matter is based on the spectral variations of these aerosol radiative properties.

Brief Scientific Description of Work:

The basic tasks include a series of trade studies designed to 1) detect the presence of suspended matter, 2) determine the type of suspended matter, 3) quantify the aerosol properties.

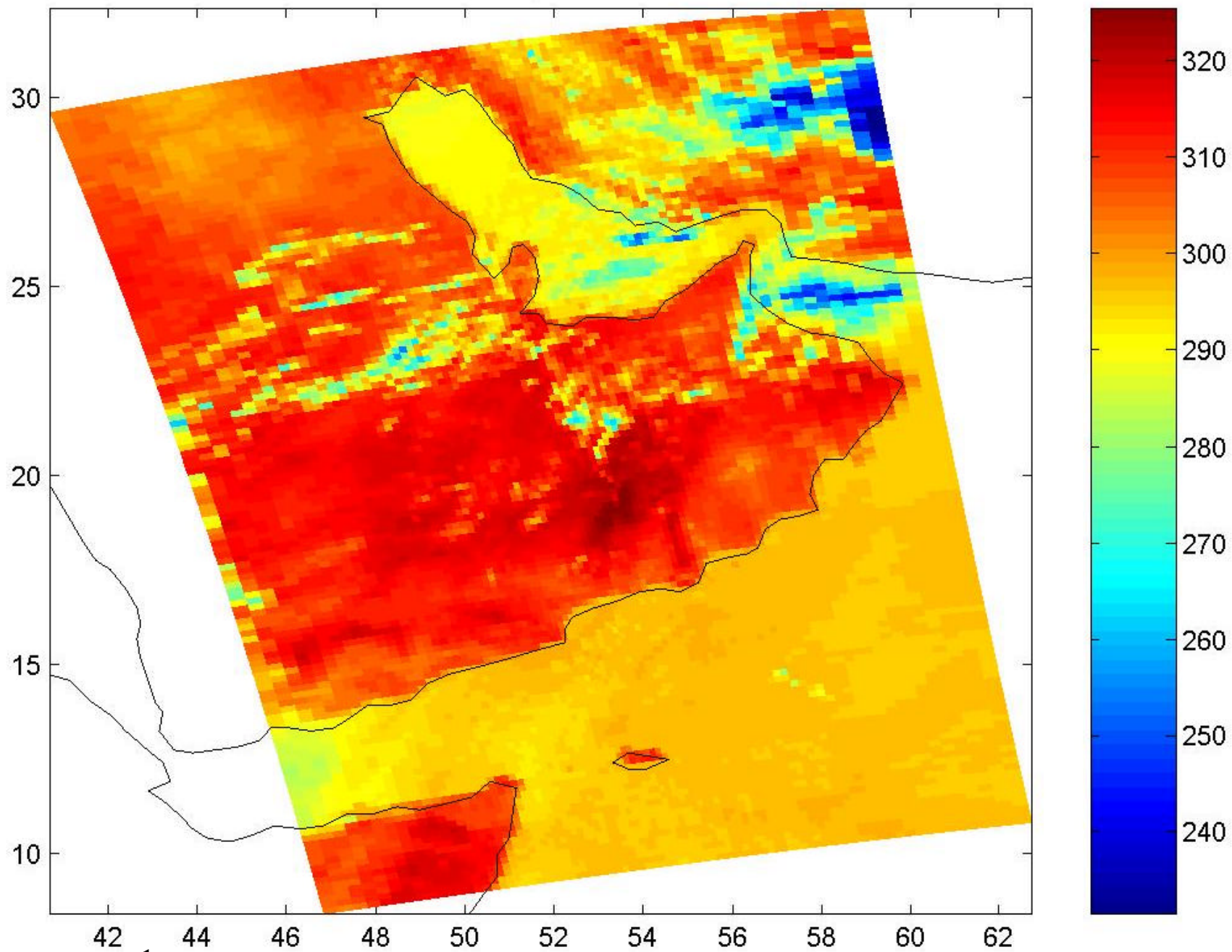
Approach

- Theoretical simulation
- Application to observations
 - Aircraft
 - AIRS



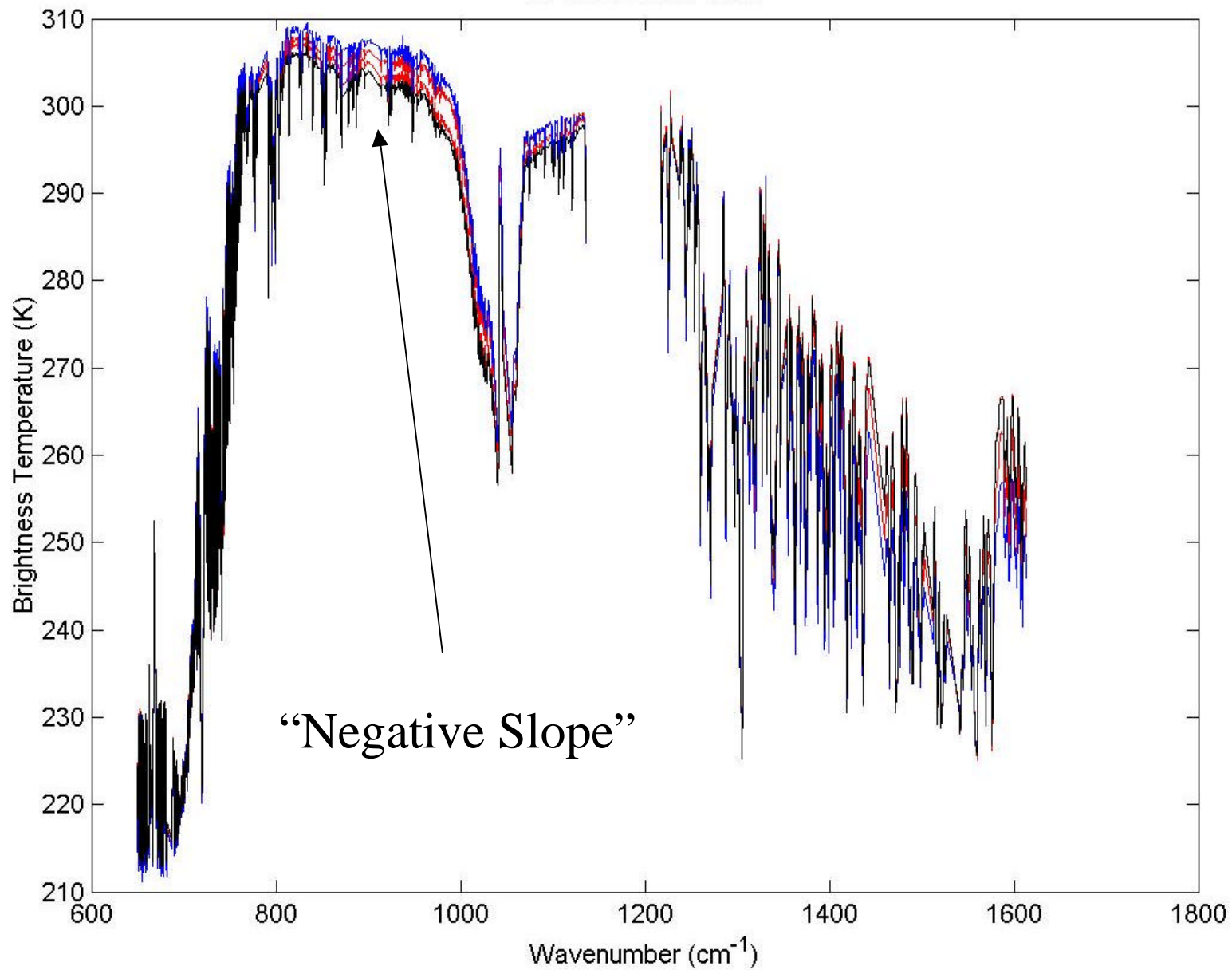
MODIS, March 20, 2003

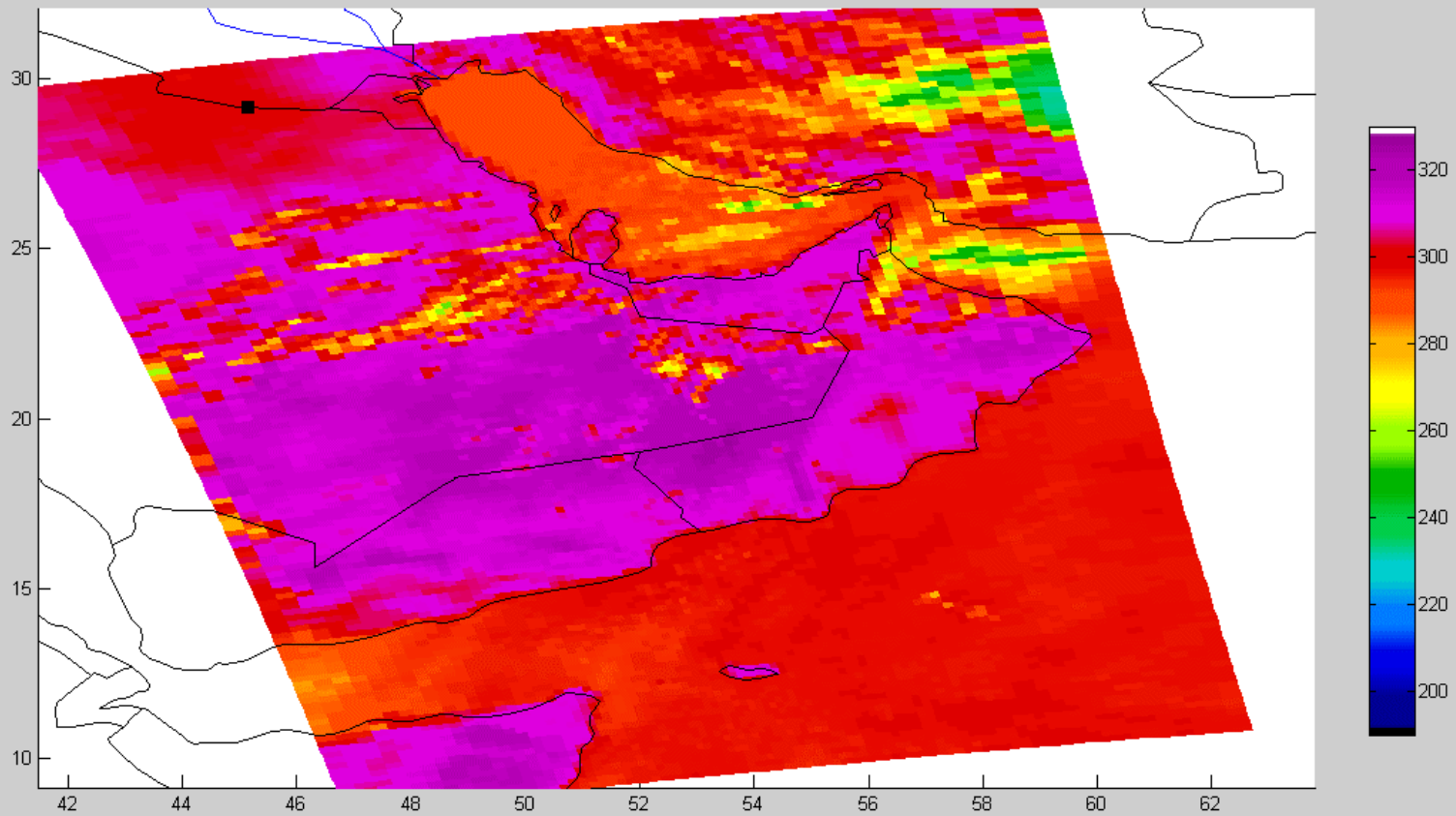
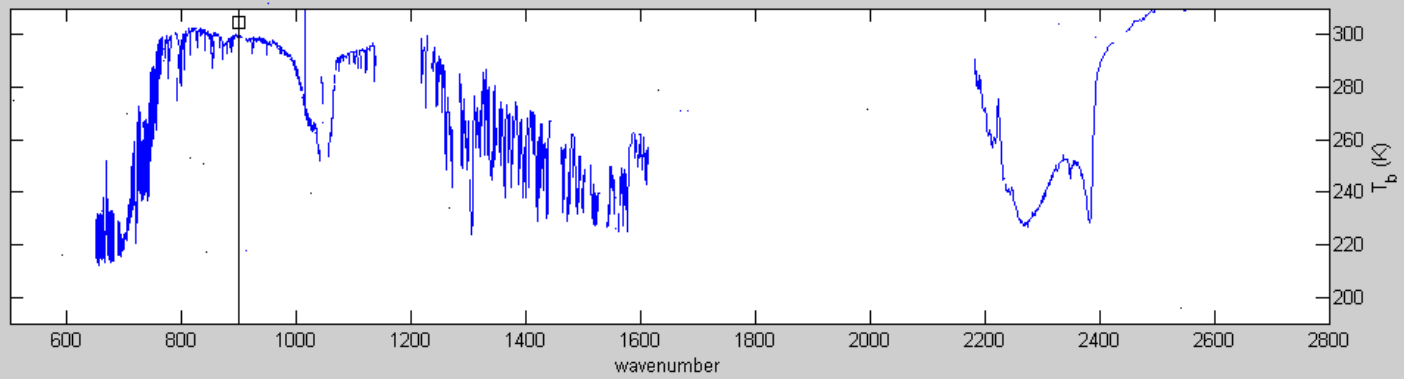
20 March 2003, 895-903 cm^{-1}



895-903 cm^{-1}

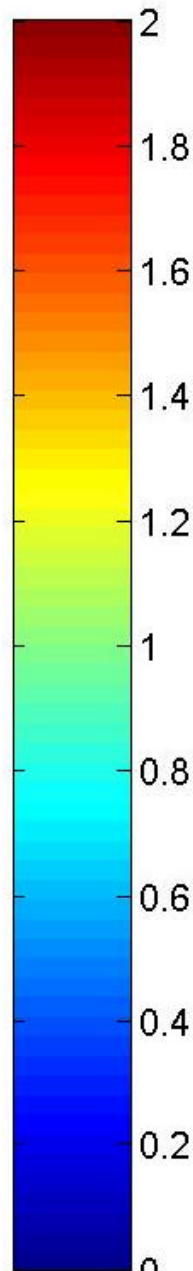
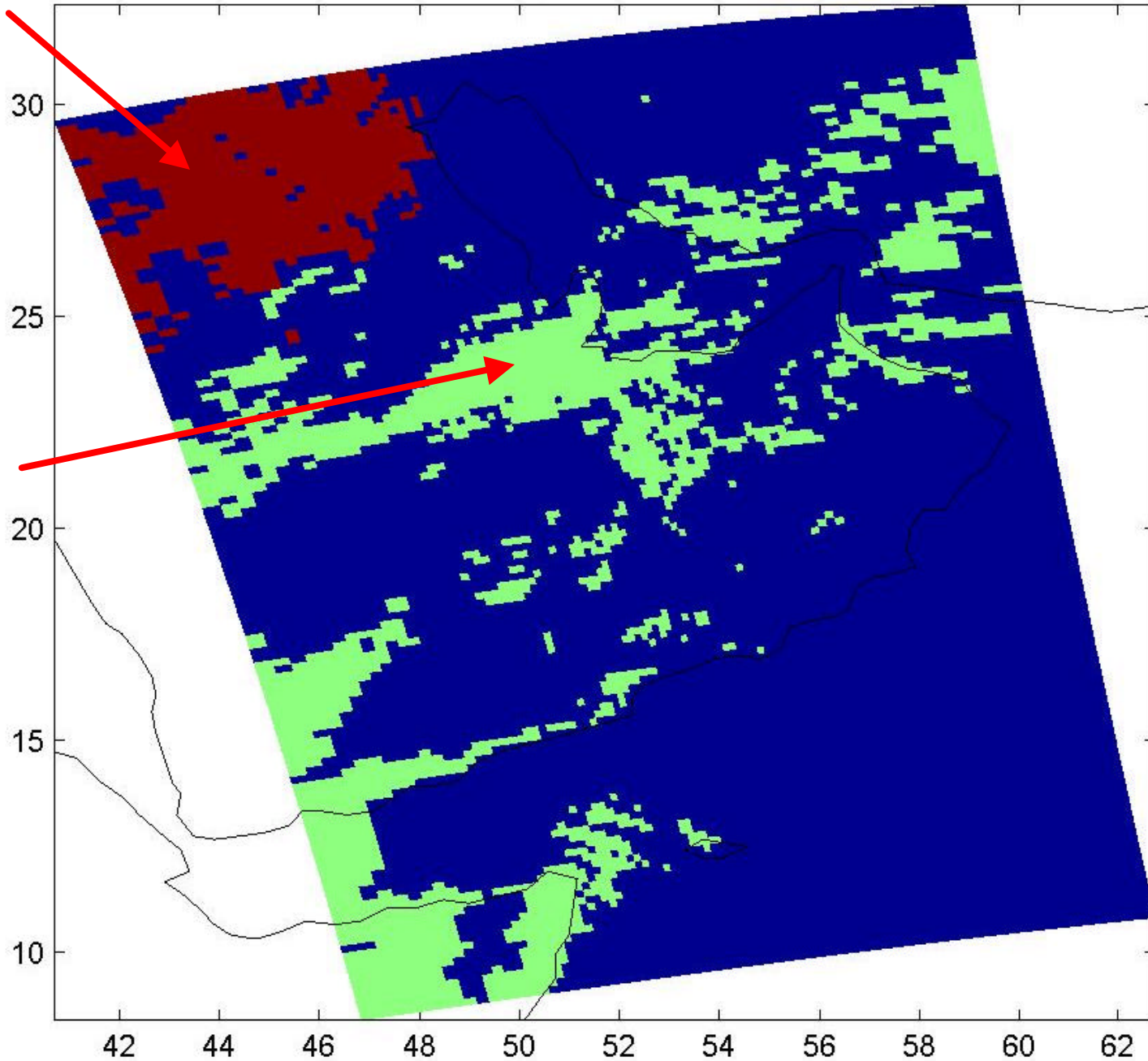
20 March 2003 2002





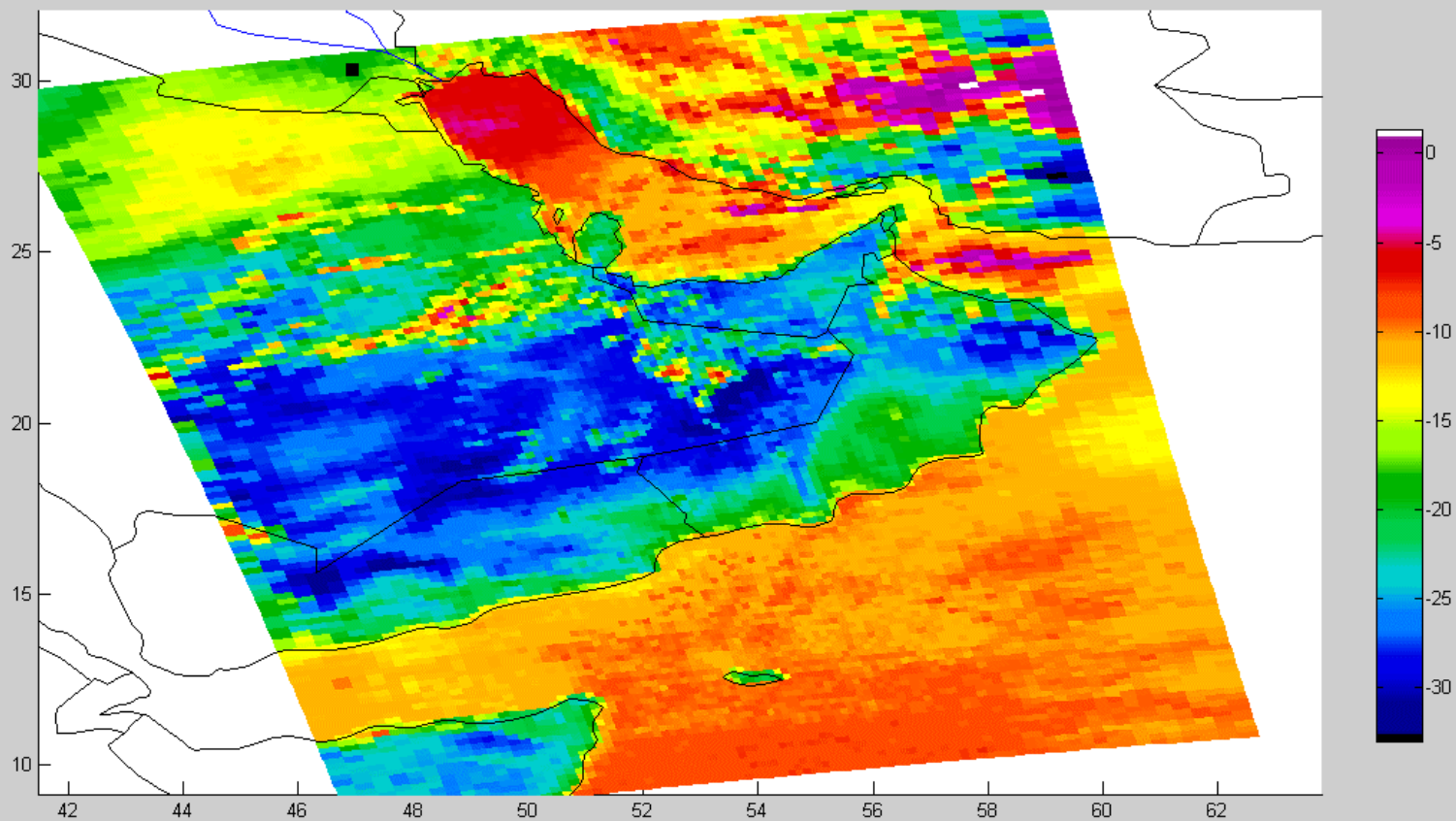
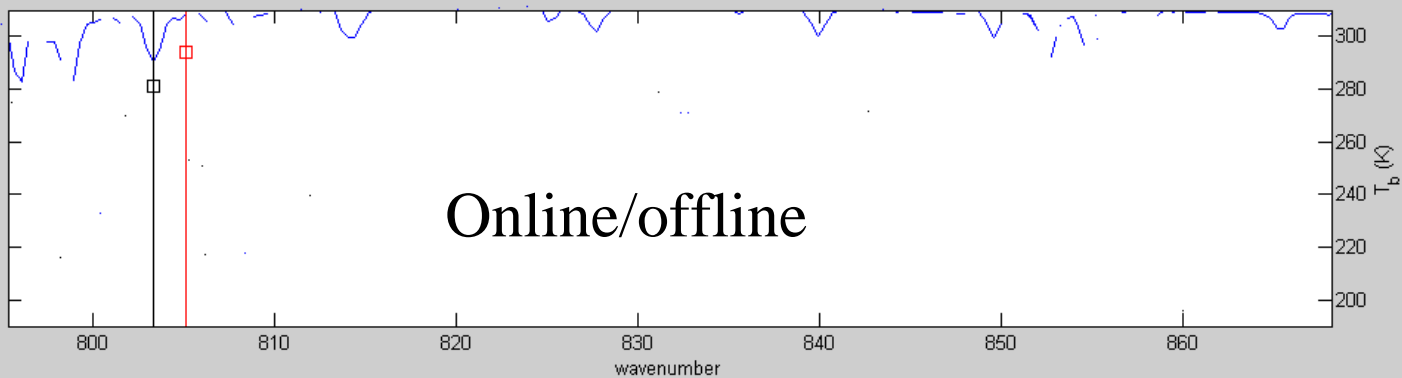
20 March 2003, dust and cloud mask

Dust



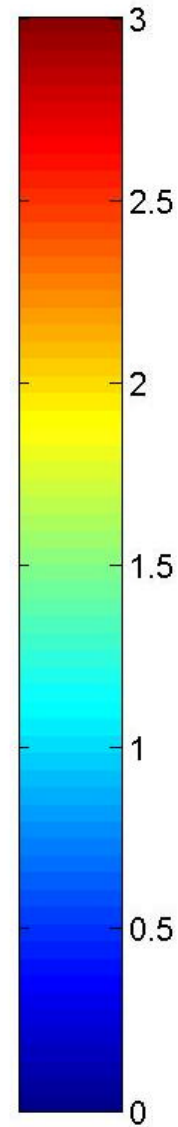
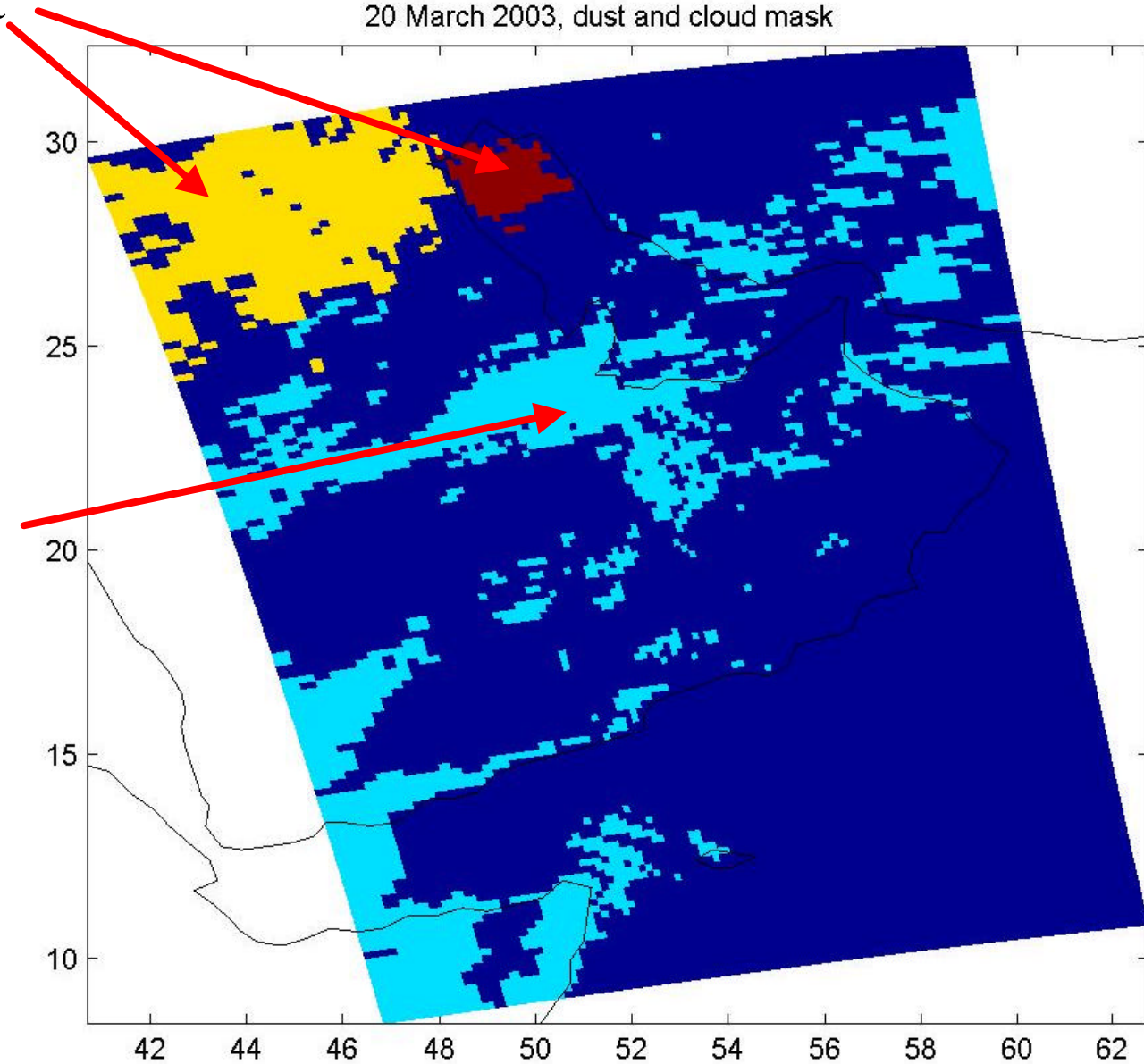
Cloud

803.288 1/cm Tb - 805.12 1/cm Tb



20 March 2003, dust and cloud mask

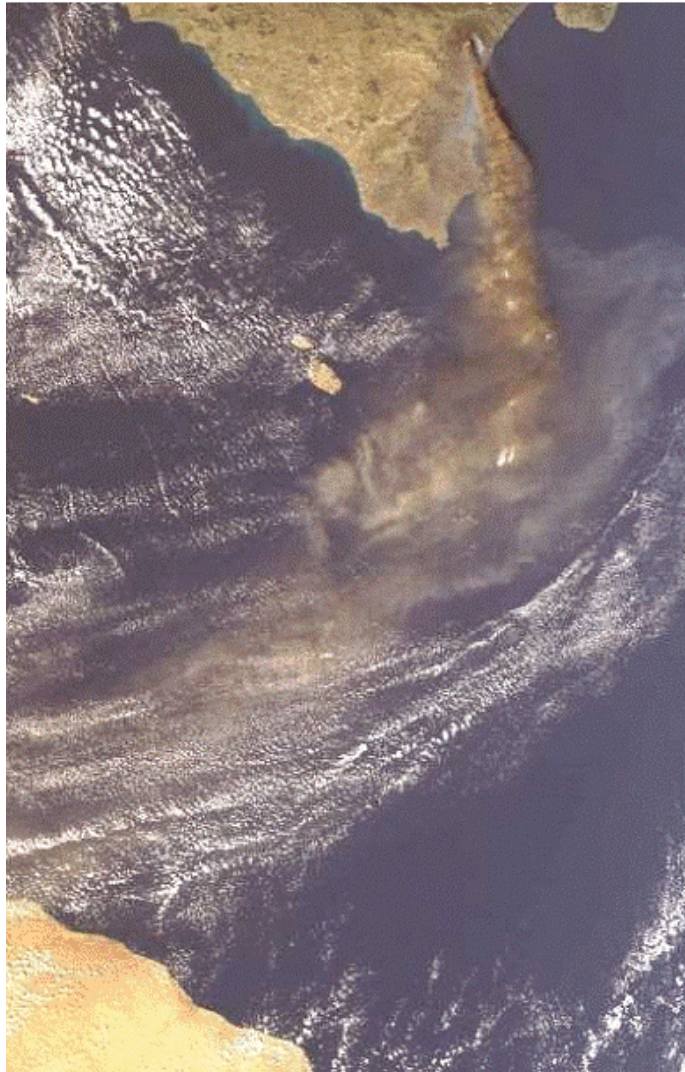
Dust



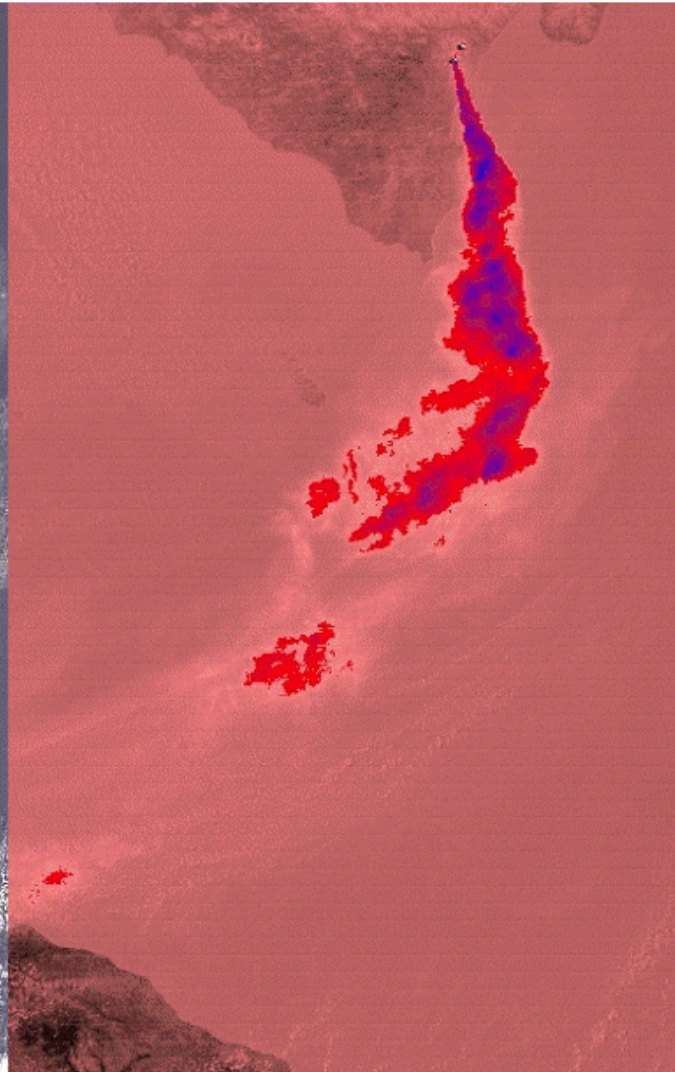
Cloud

Mount Etna Eruption

8 - 11 micron BTDIF

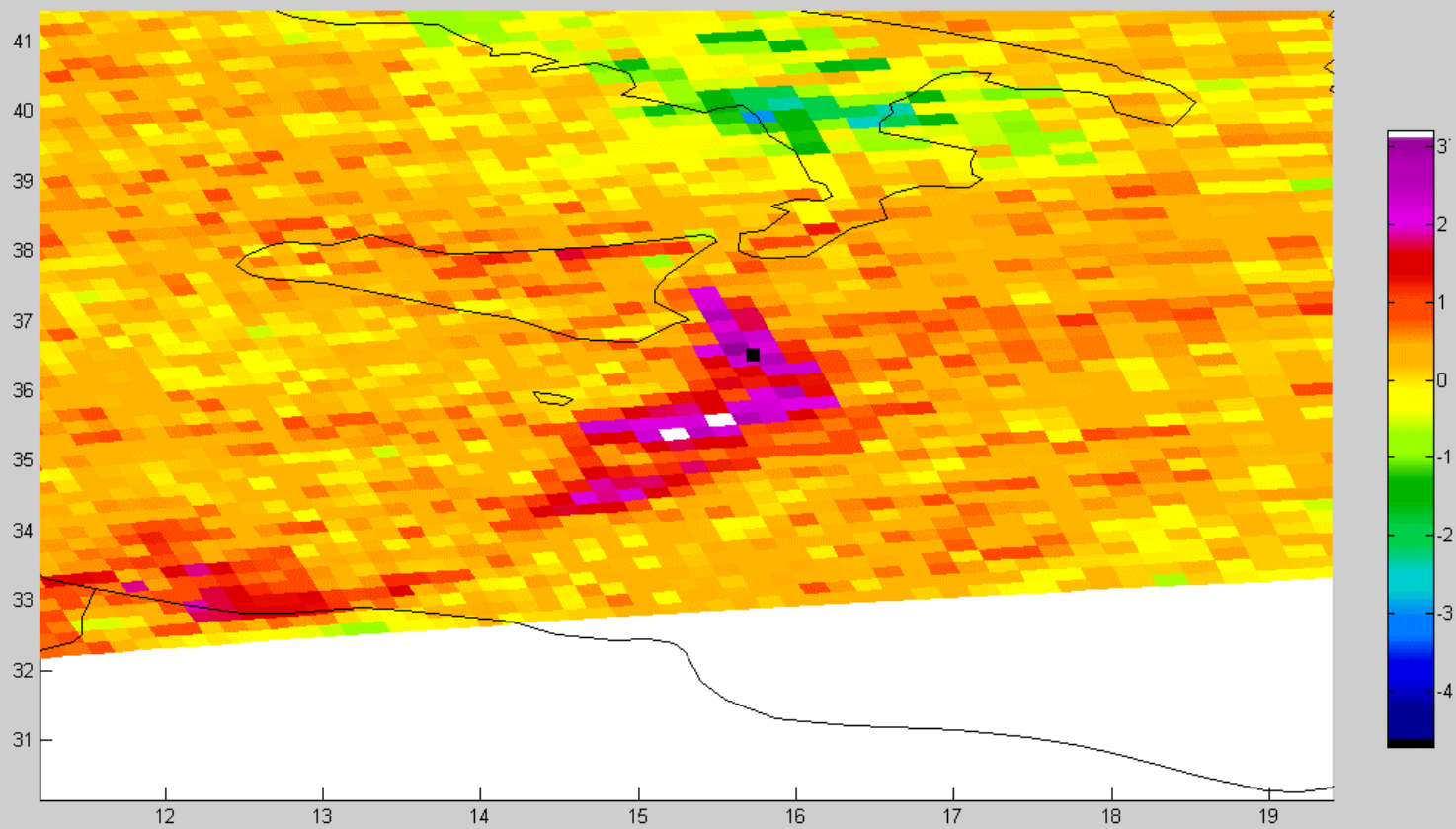
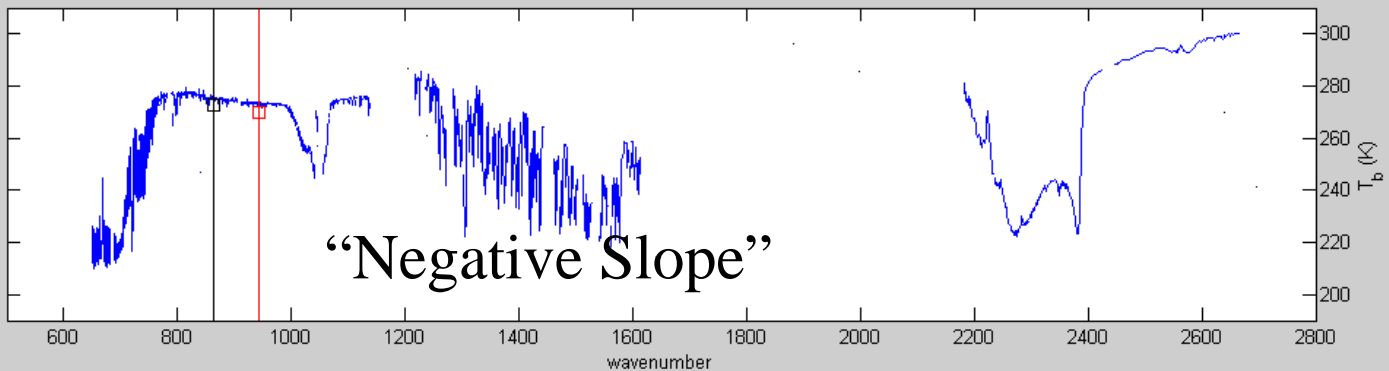


12:15 UTC 28 October 2002
MODIS Aqua

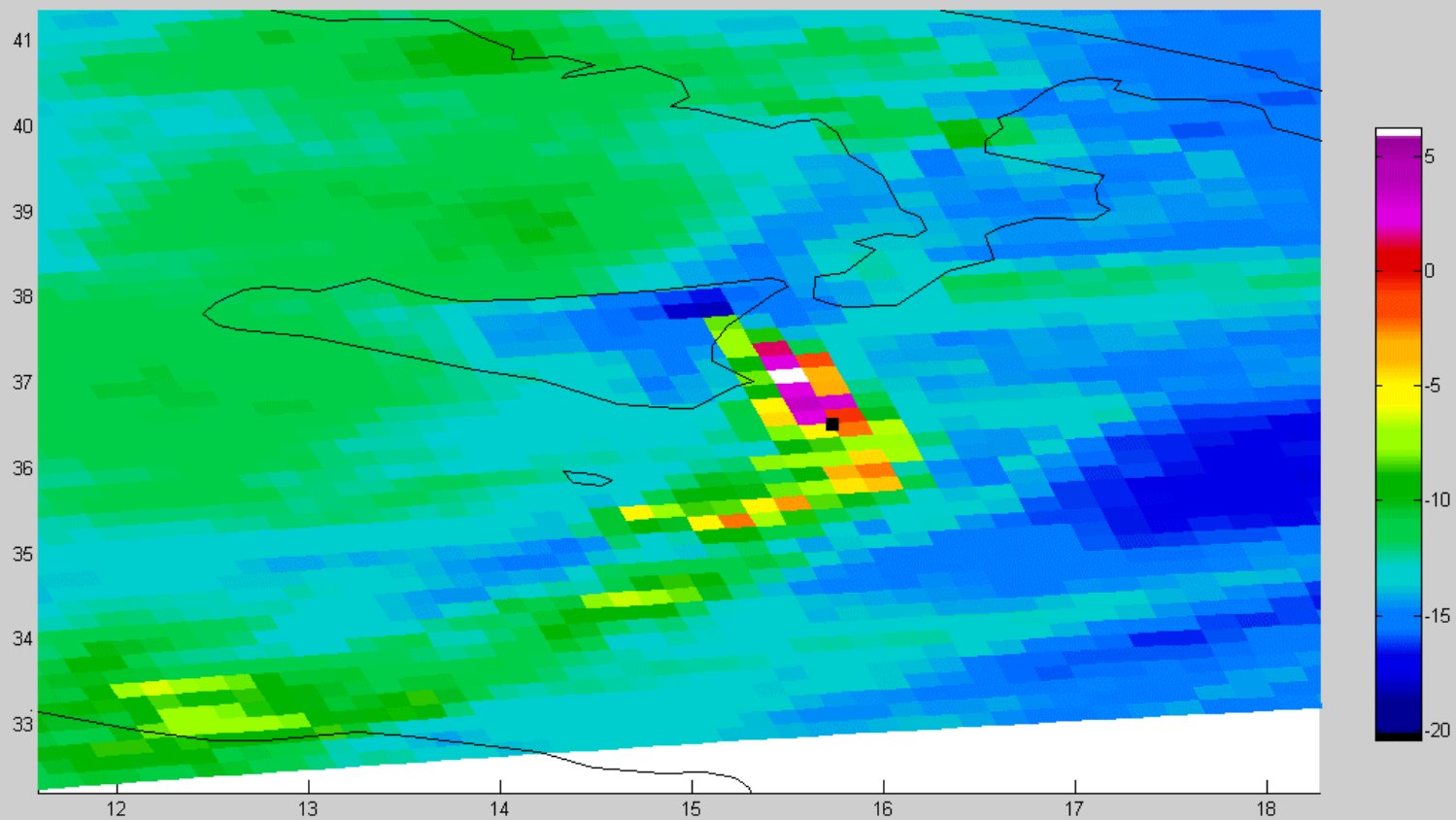
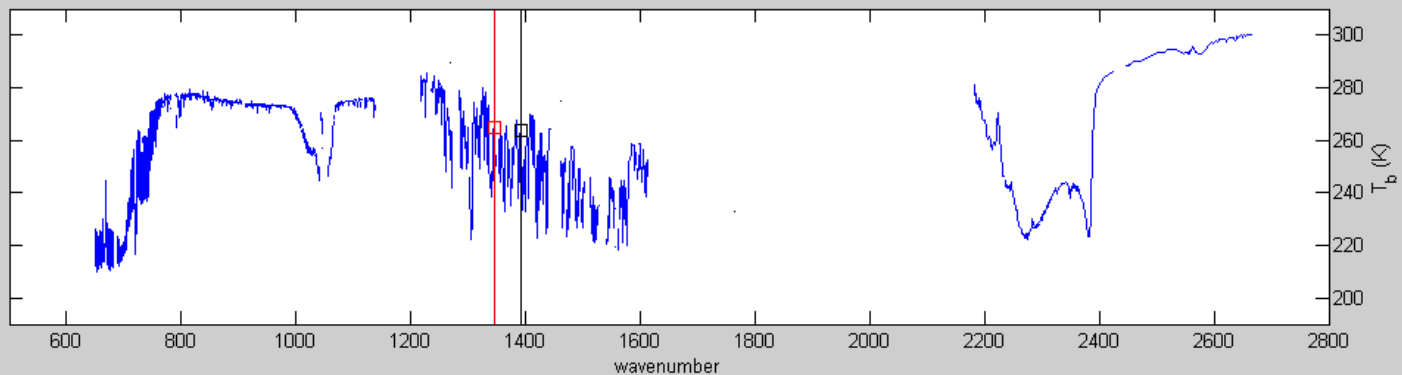


-10 -5 0 +5 +10 K

862.053 1/cm Tb - 942.067 1/cm Tb



1392.153 1/cm Tb - 1345.312 1/cm Tb



Next Steps....

- Simulations sensitivity studies
 - RTSPEC for on-line and off-line approach
- Routine Application of algorithm
 - Aerosol scenes, and aerosol free scenes
 - Different dust types

