



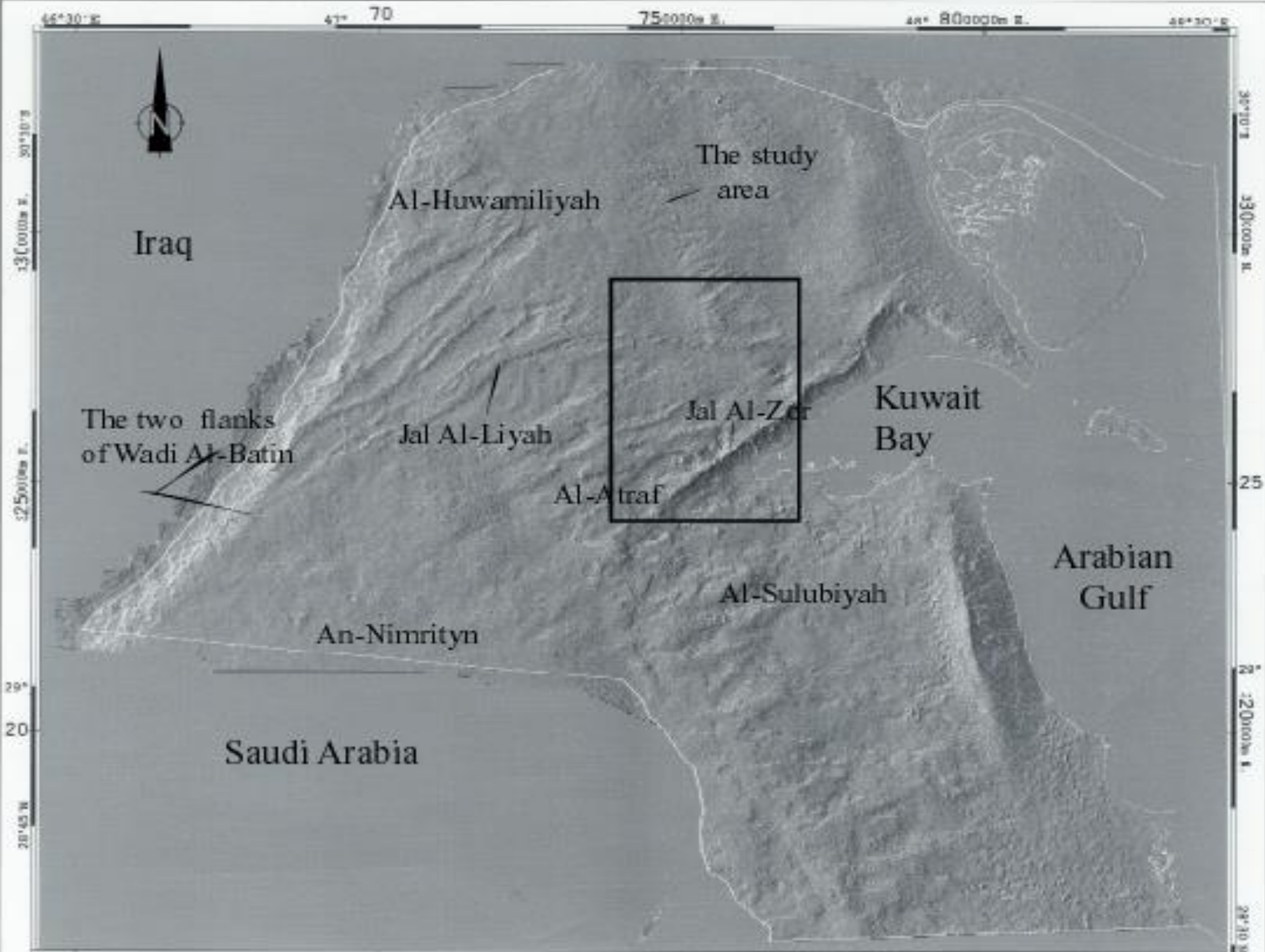
Kuwait Institute for Scientific Research

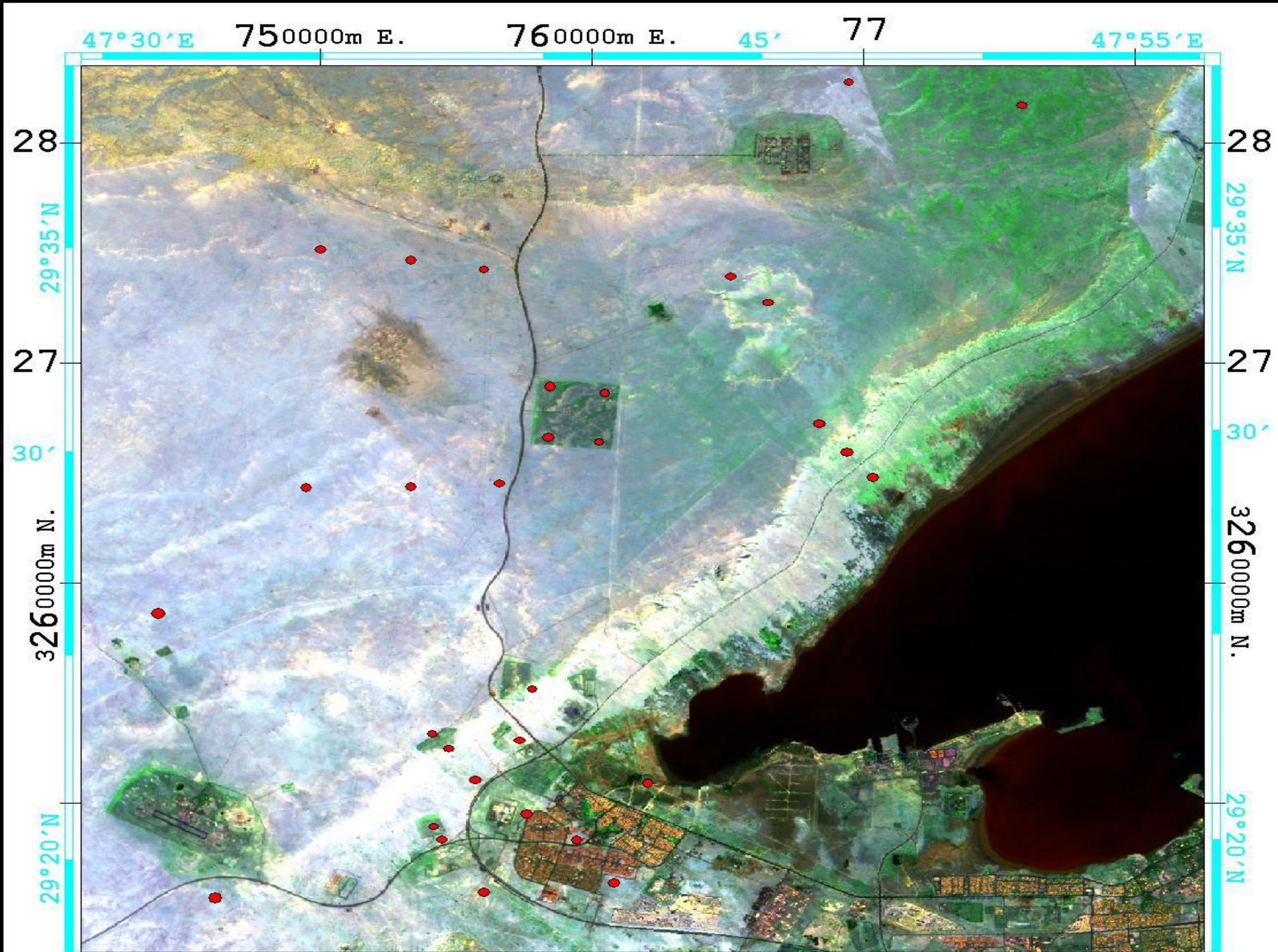
الغبار و العواصف الغبارية
Dust and dust storms

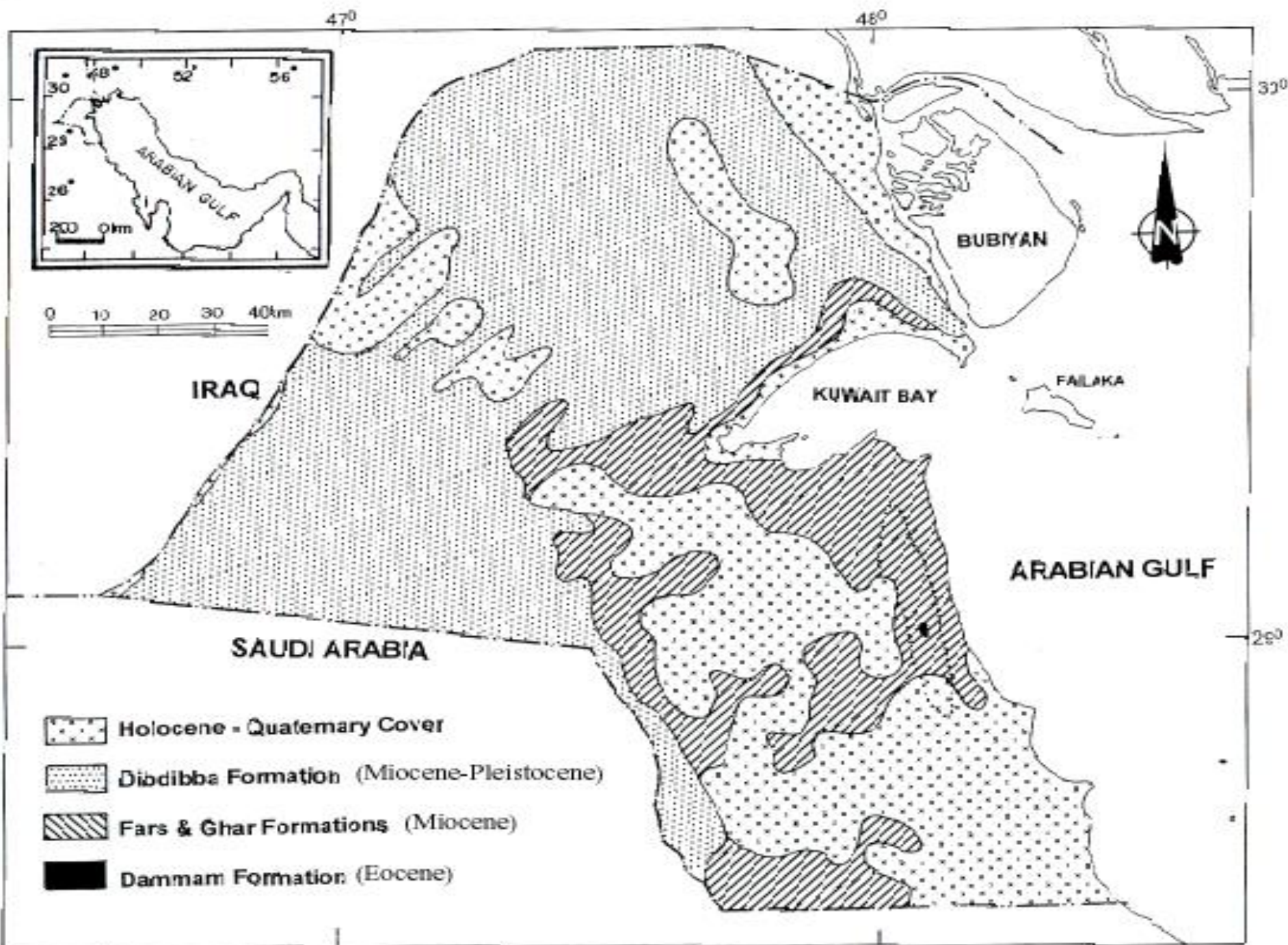
علي الدوسري

Coastal and Air Pollution Department

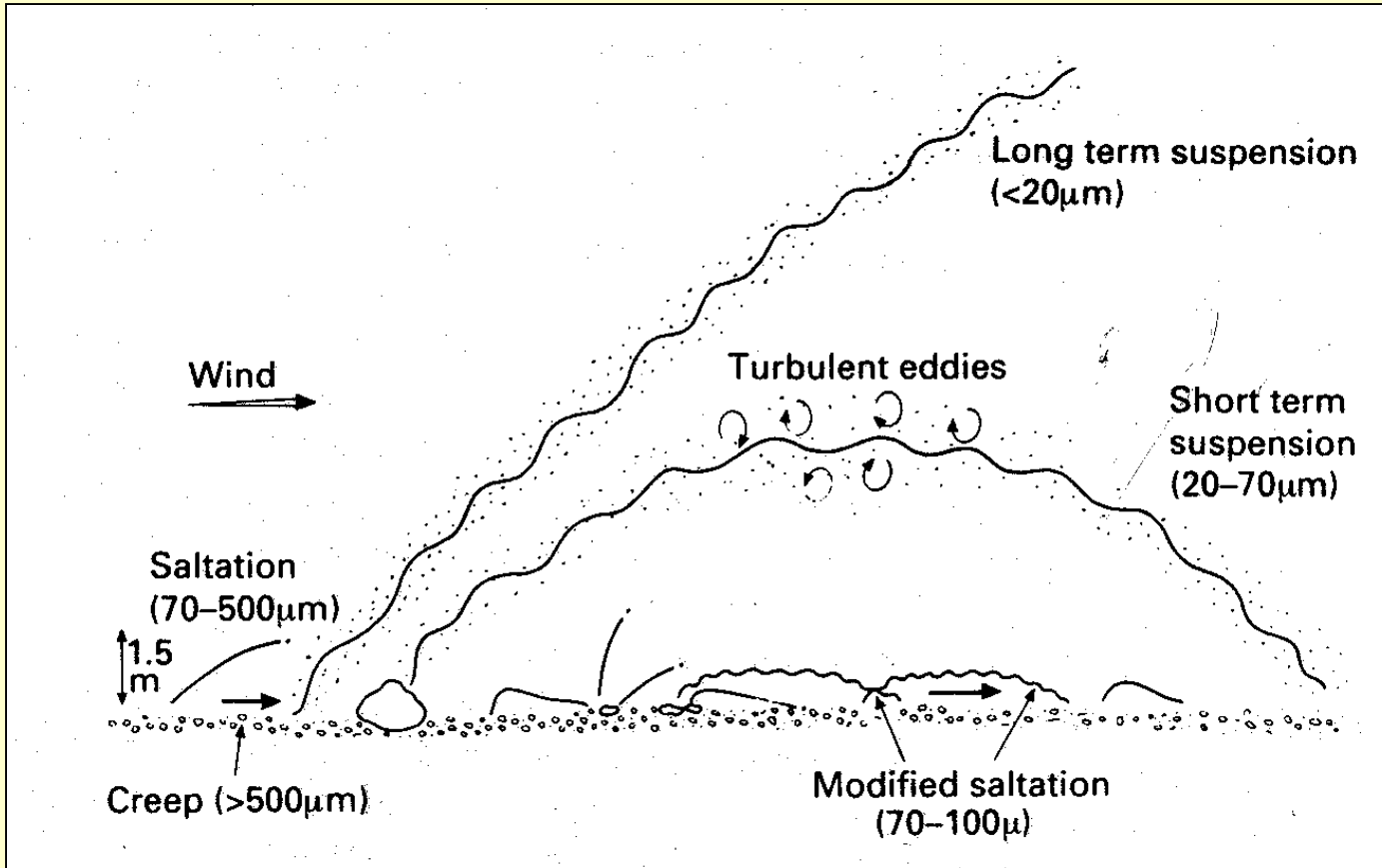
27 JUNE 2006







Grains transportation by wind



الزحف والدحرجة

Rolling

الوثب

Saltation

التعلق

Suspension







April 1984







25.6.92

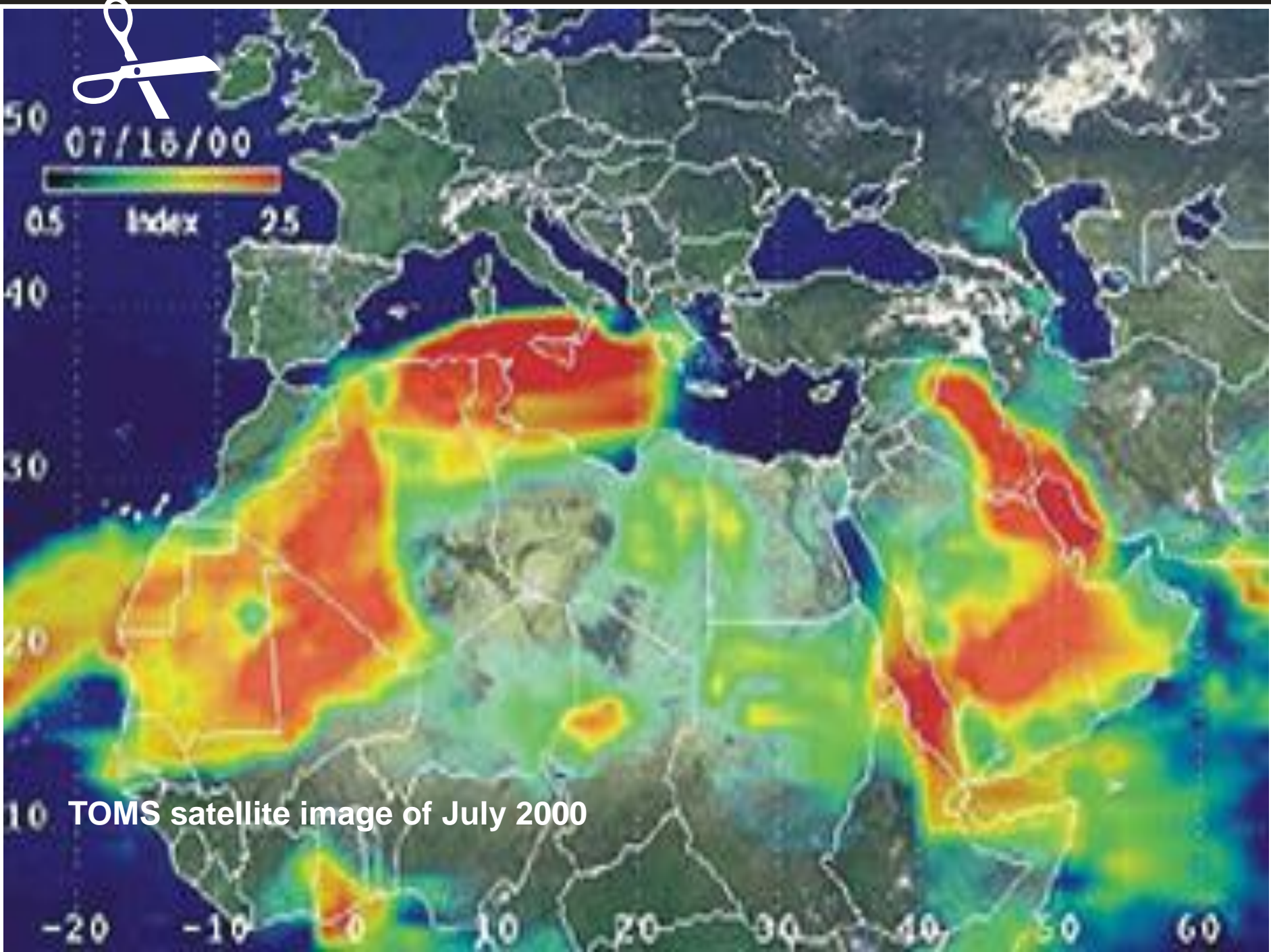




07/18/00

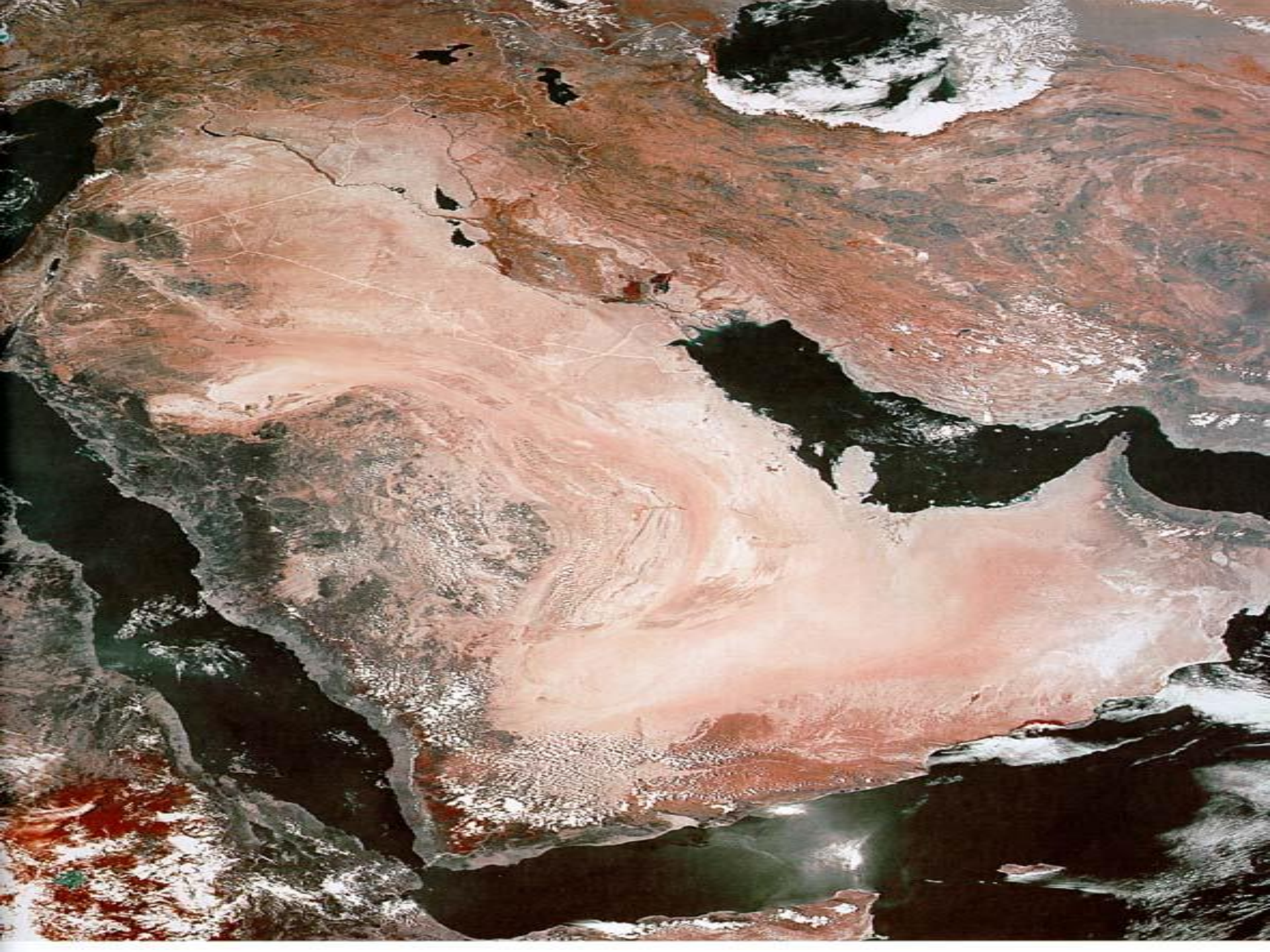


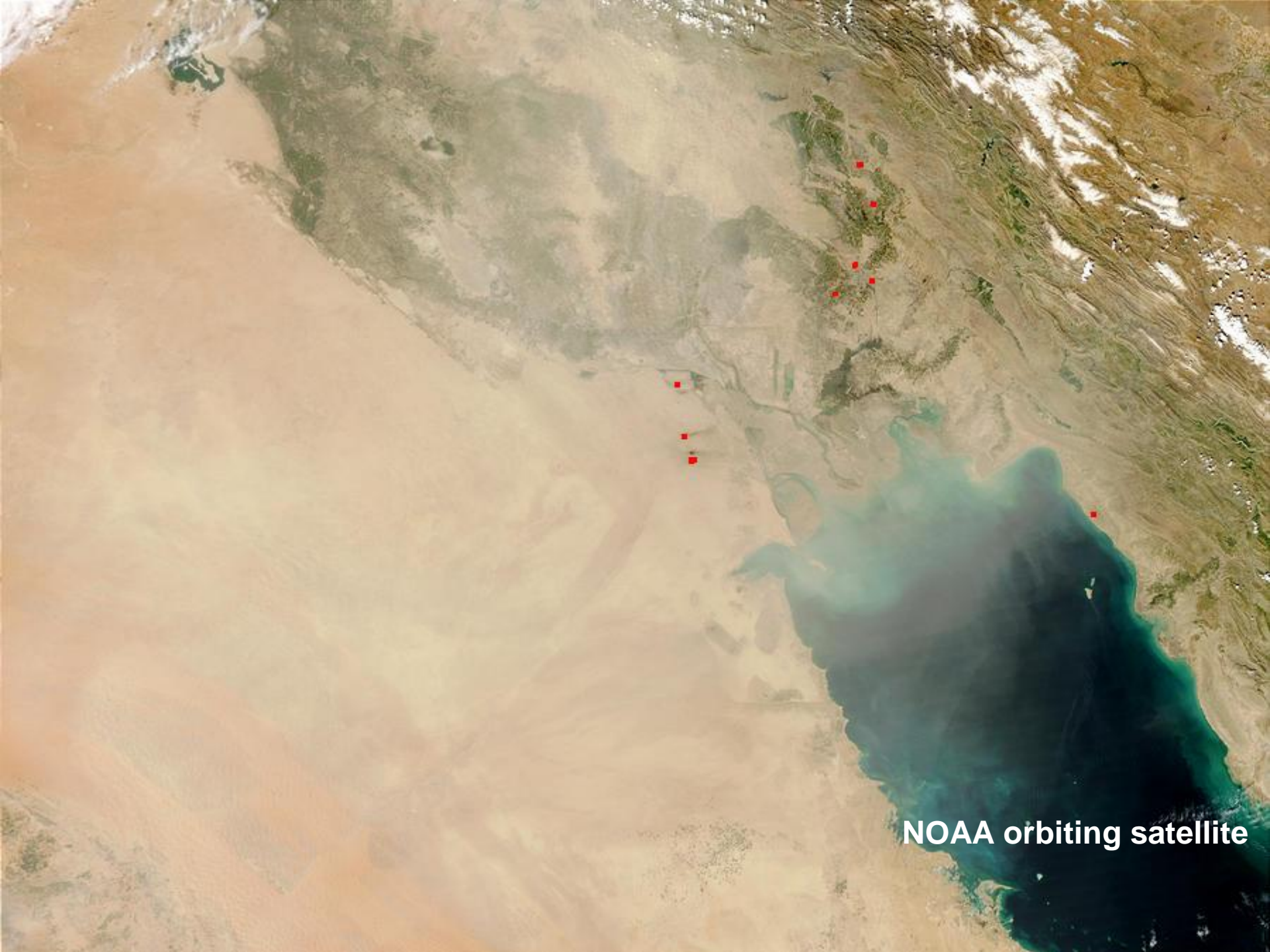
0.5 Index 25



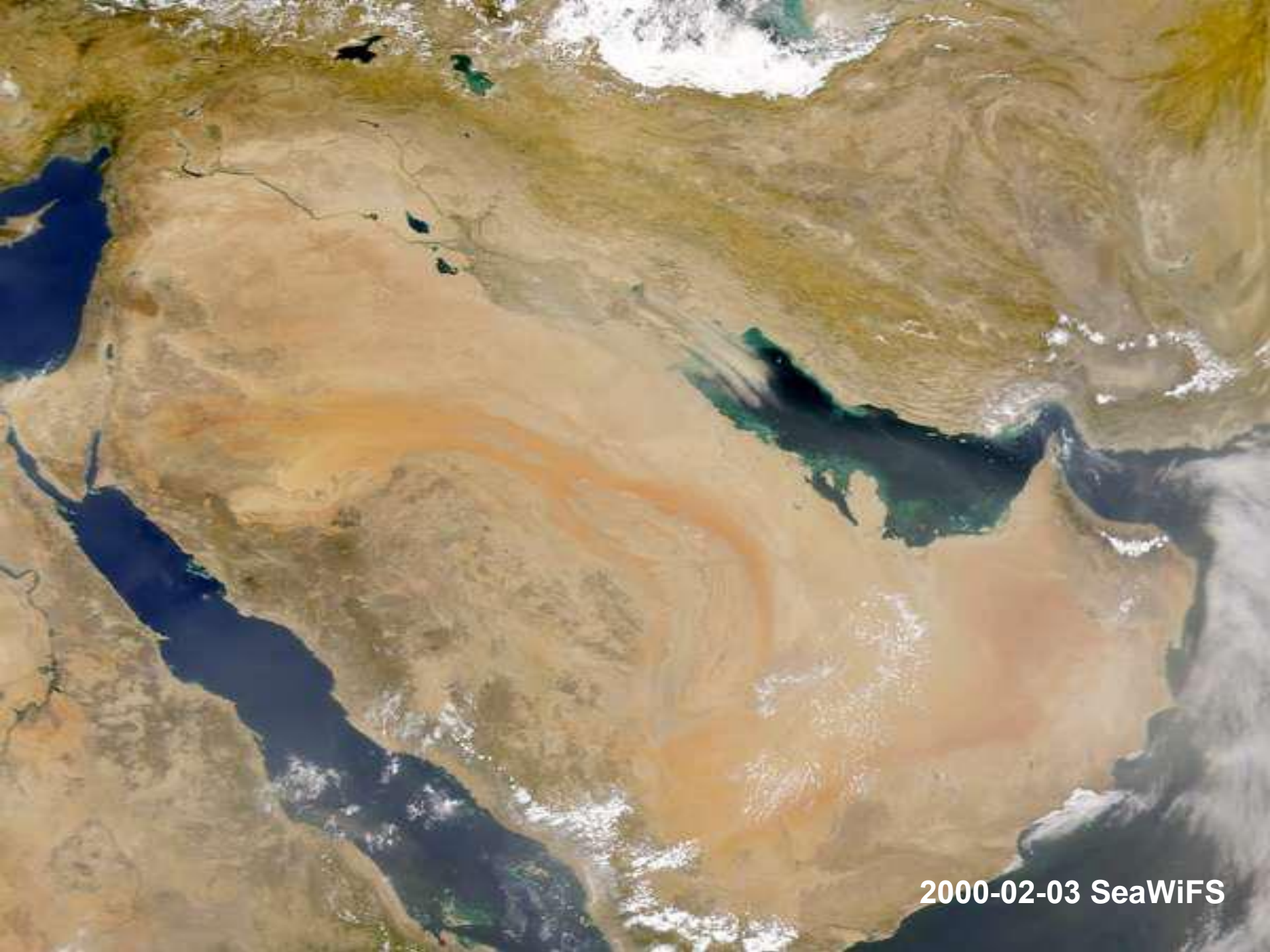
10 TOMS satellite image of July 2000

-20 -10 0 10 20 30 40 50 60



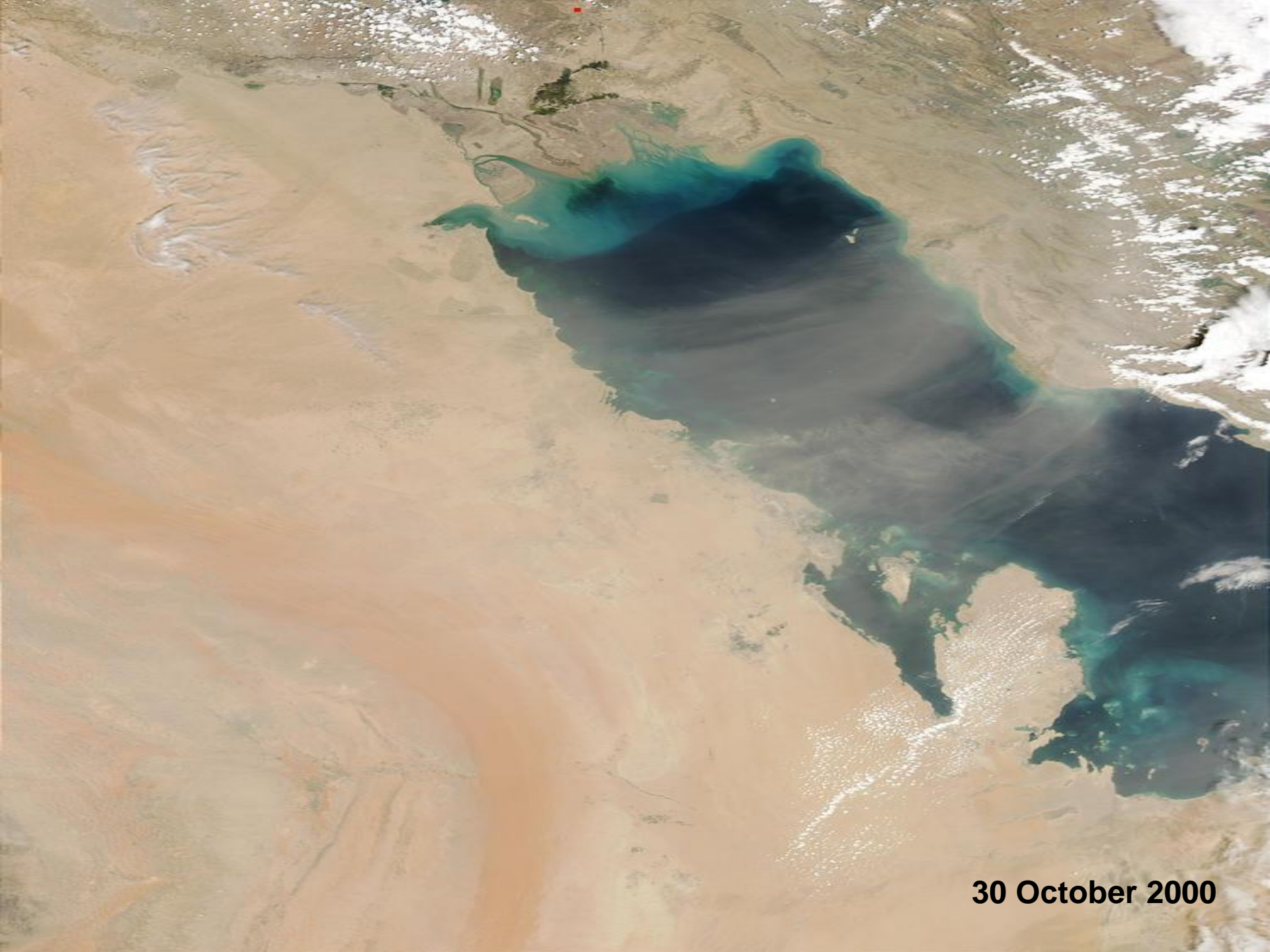


NOAA orbiting satellite

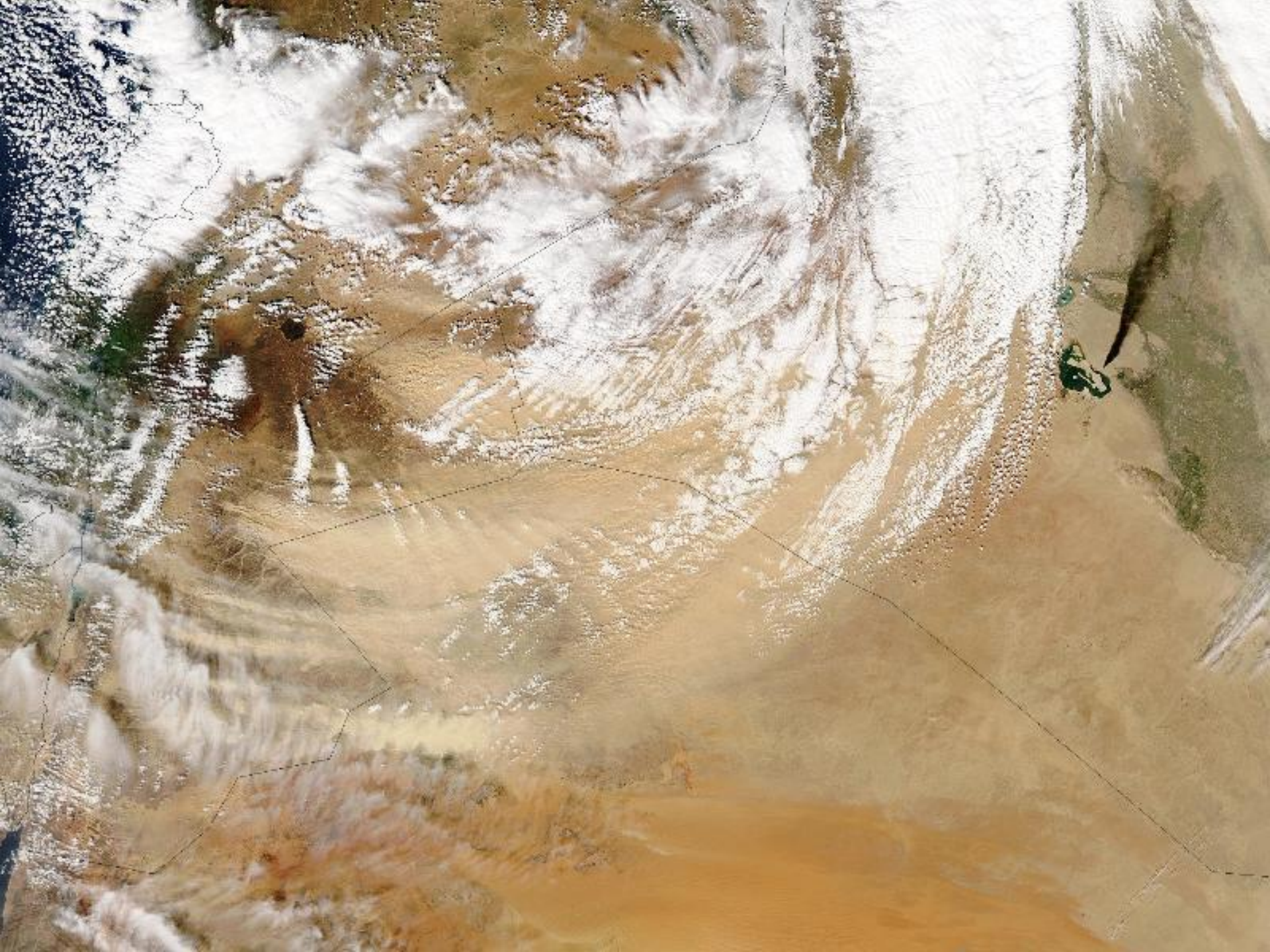


2000-02-03 SeaWiFS



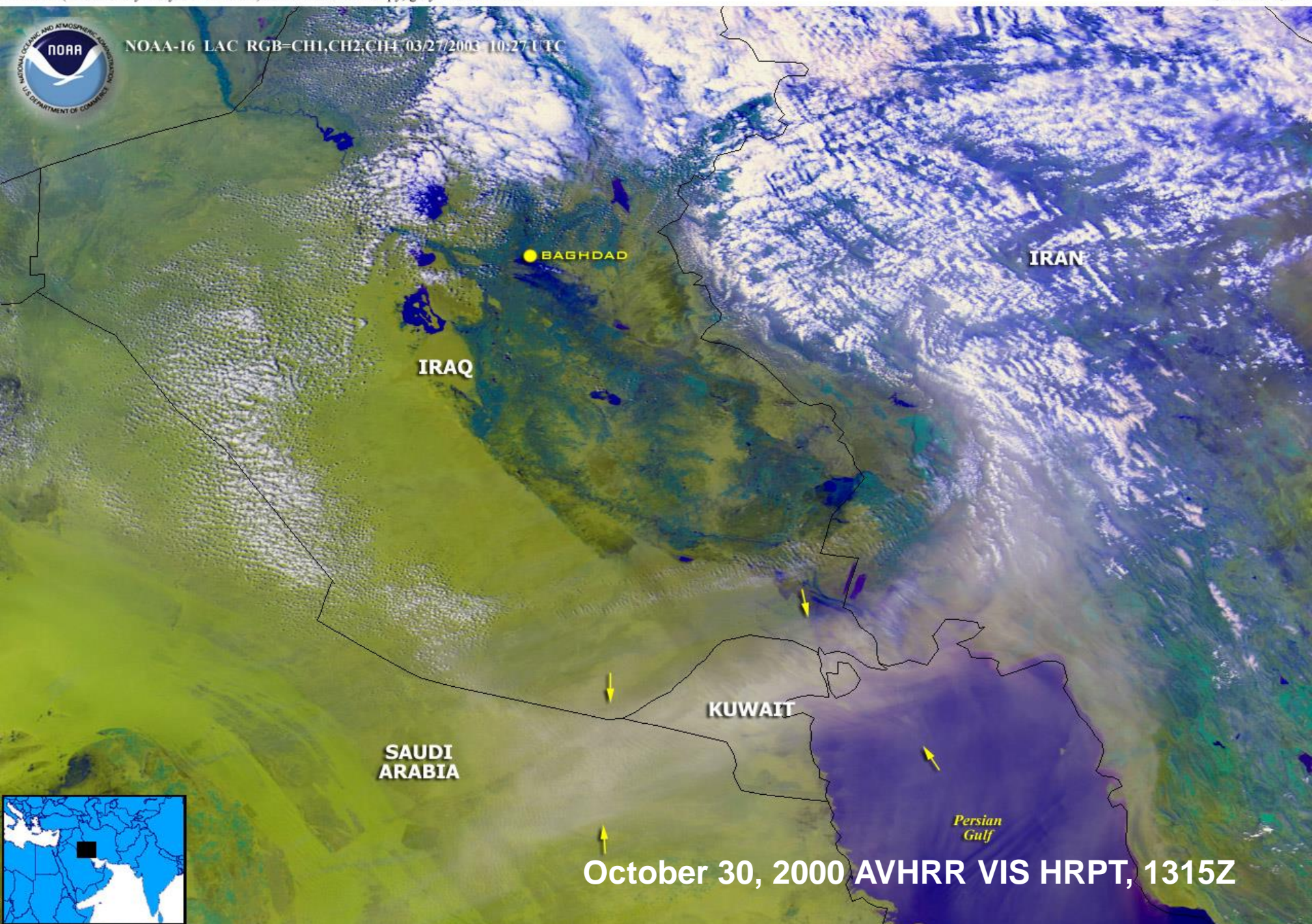


30 October 2000

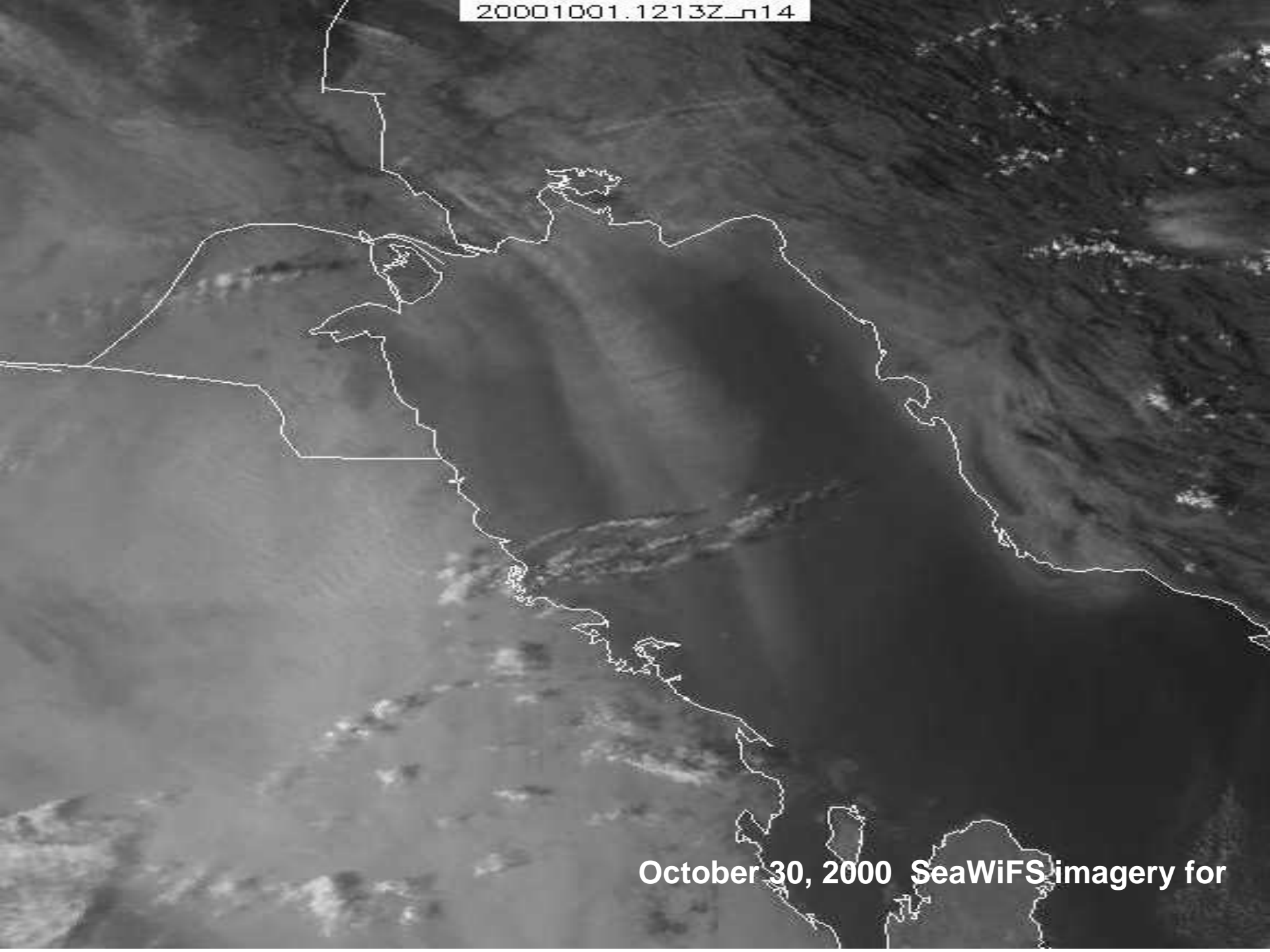


This NOAA-16 image depicts a sandstorm that extends across northern Saudi Arabia through Kuwait and into parts of southern Iraq. The dust (indicated by the yellow arrows) is visible as the lumpy, gray mass of cloud.

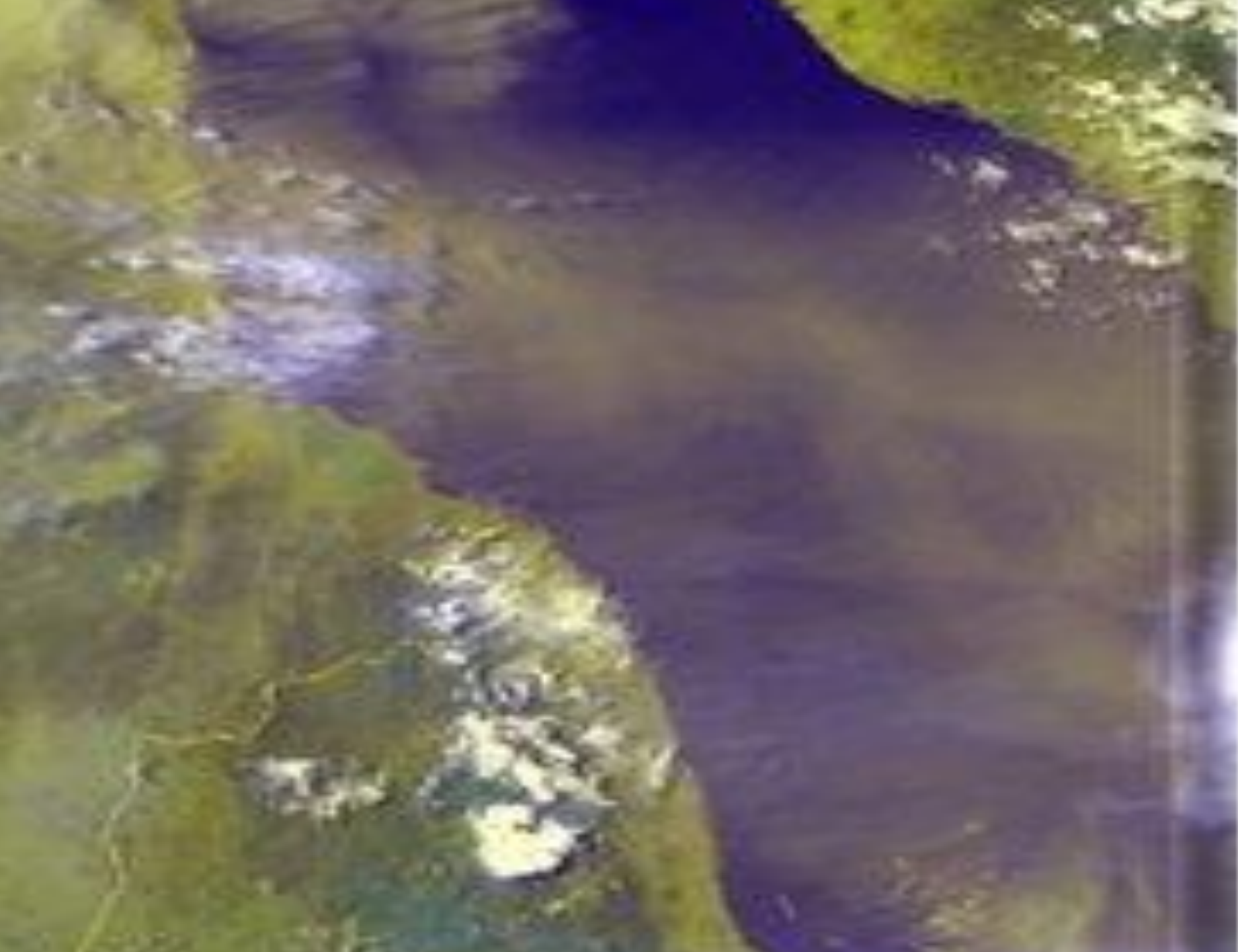
CREDIT: NOAA

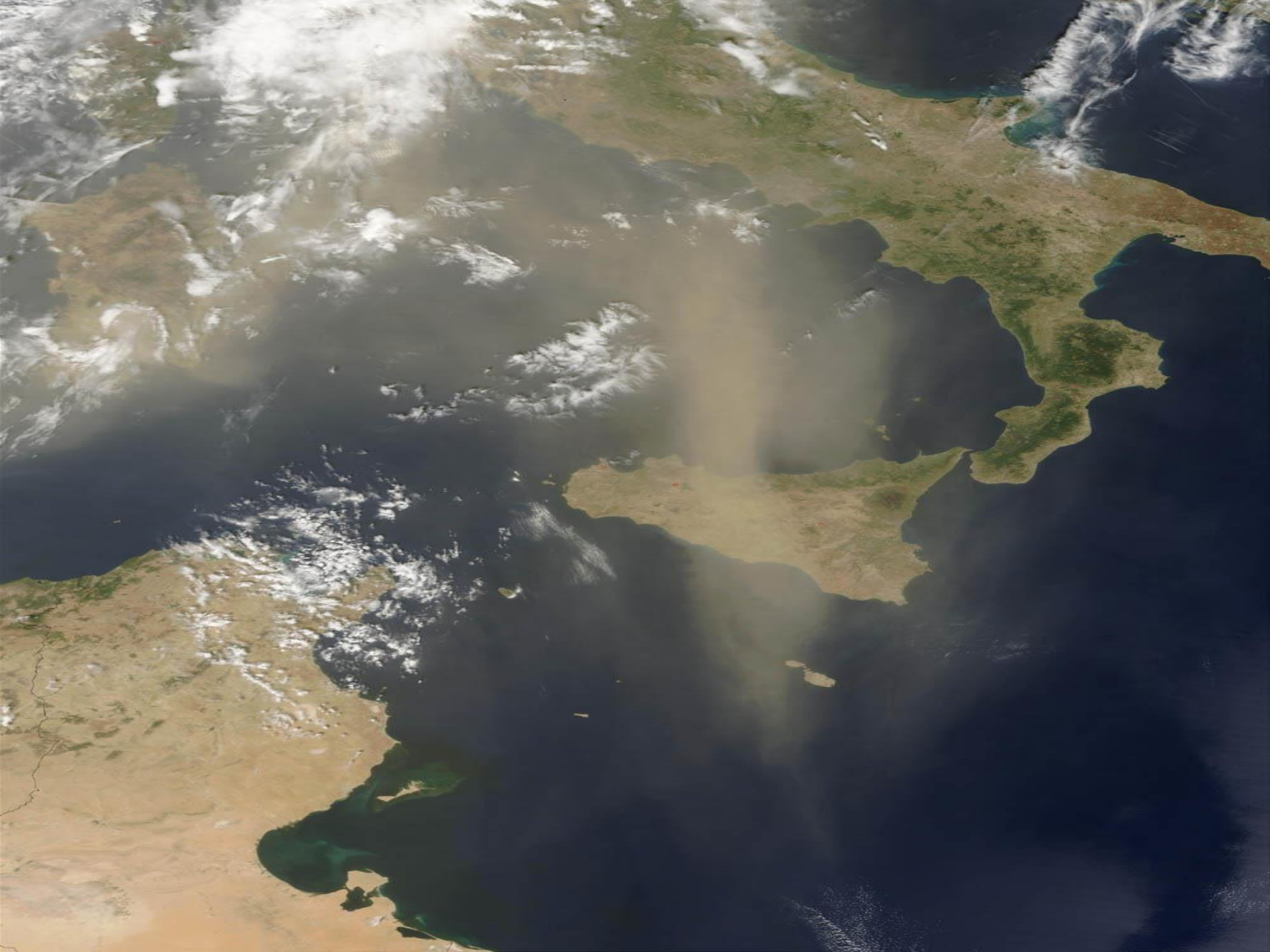


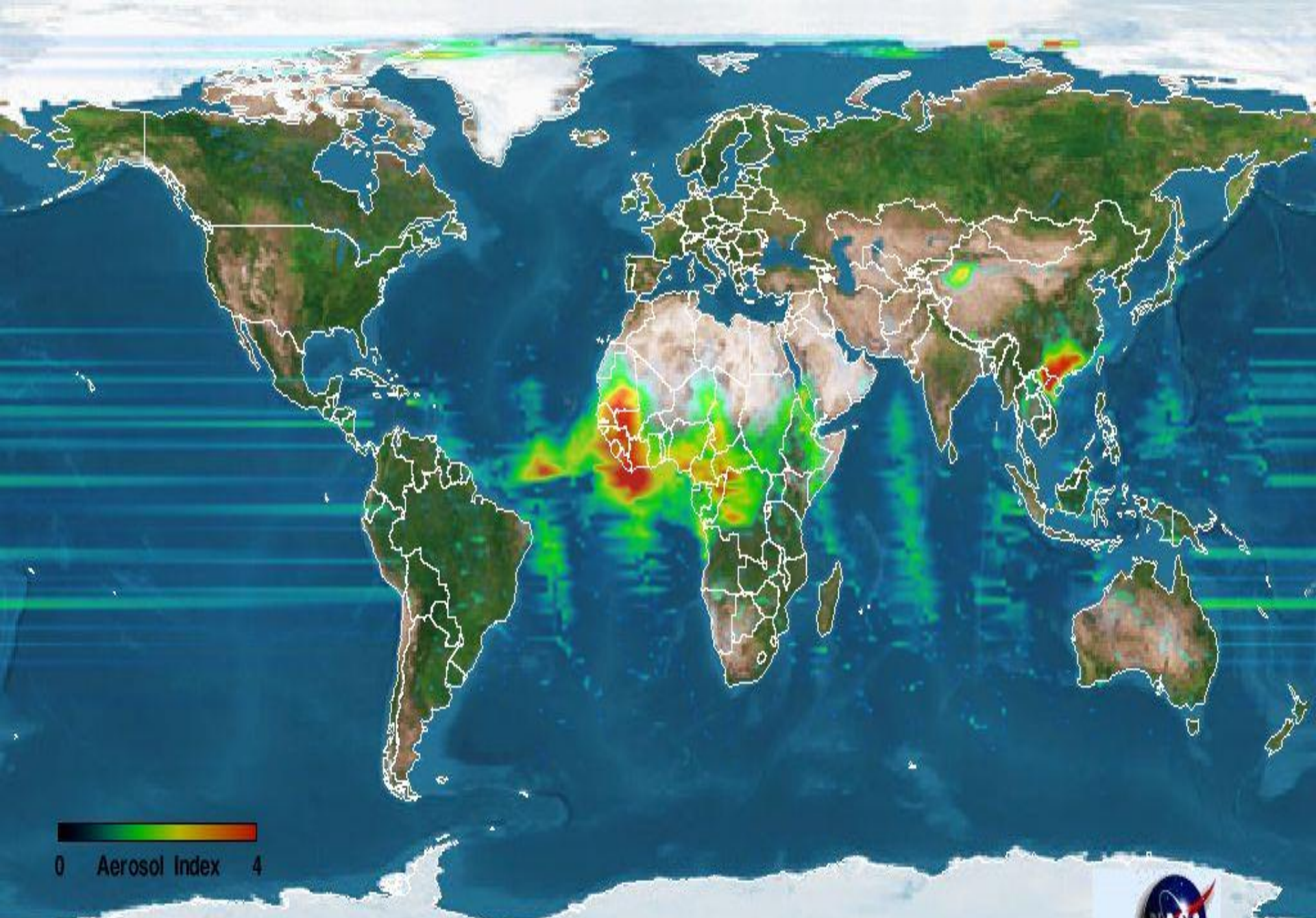
20001001.1213Z_H14



October 30, 2000 SeaWiFS imagery for





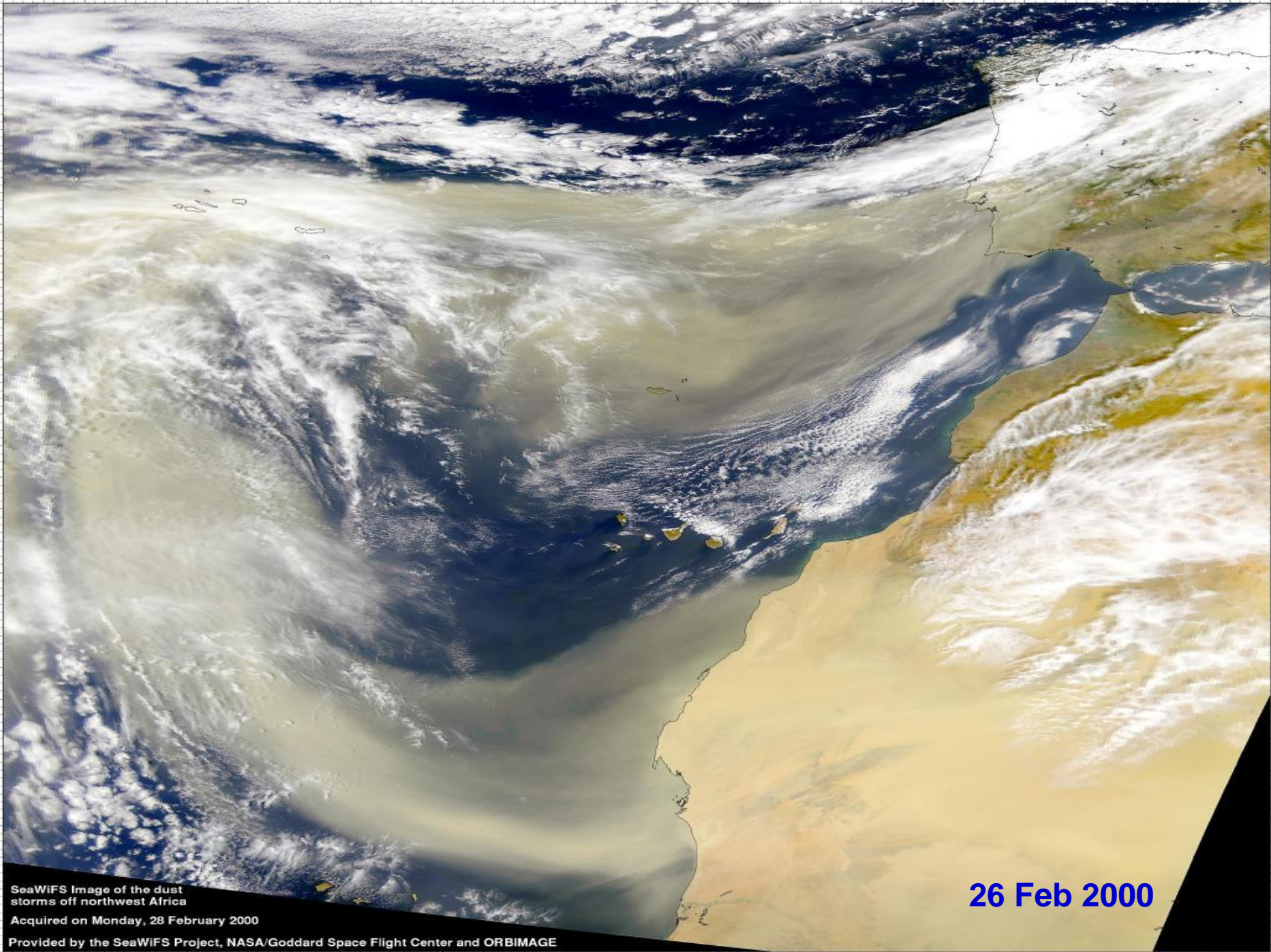


0 Aerosol Index 4

MAR 12 2004

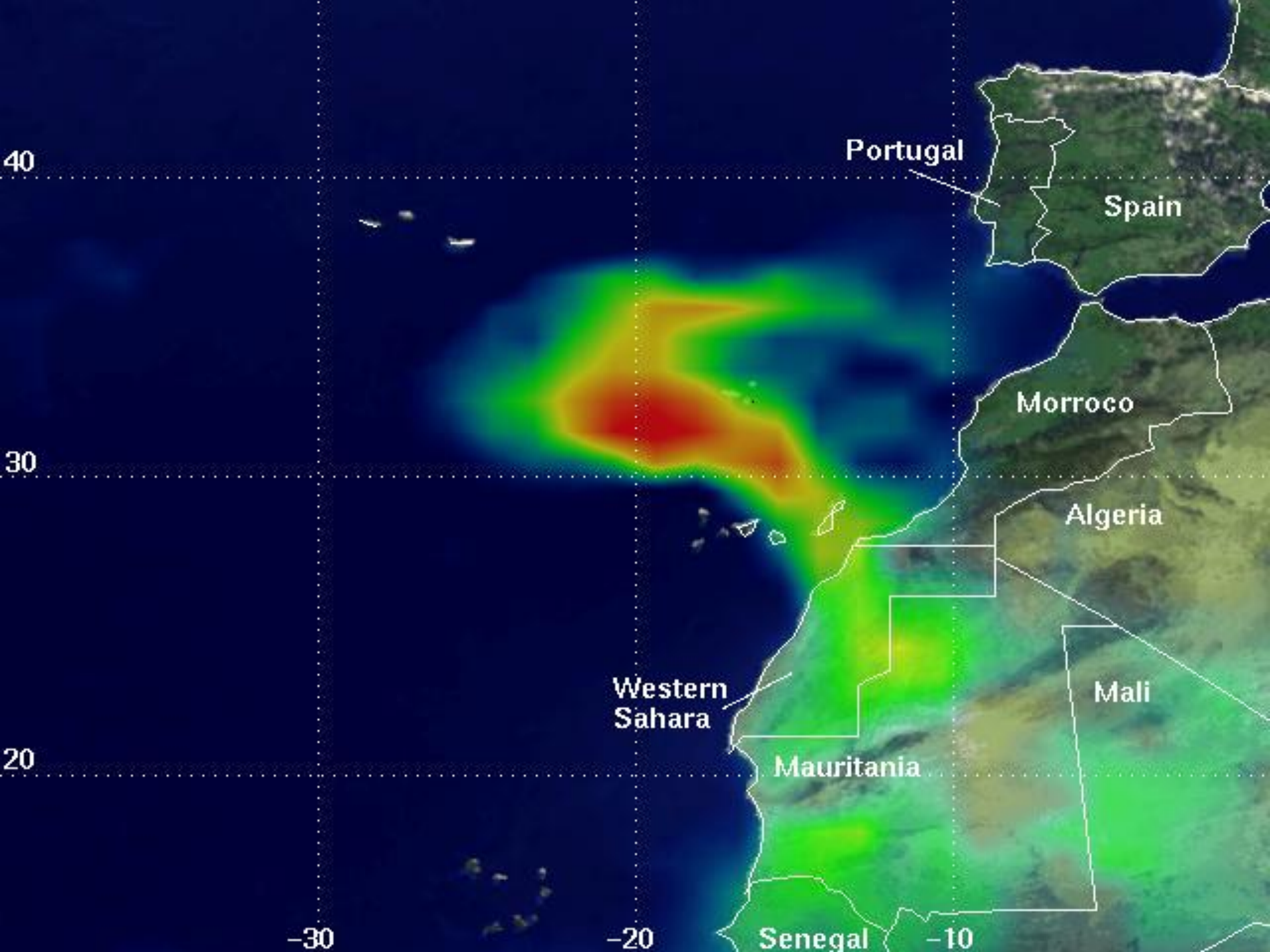
Earth Probe TOMS Aerosol Index



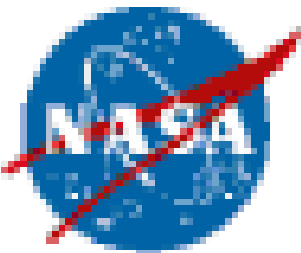
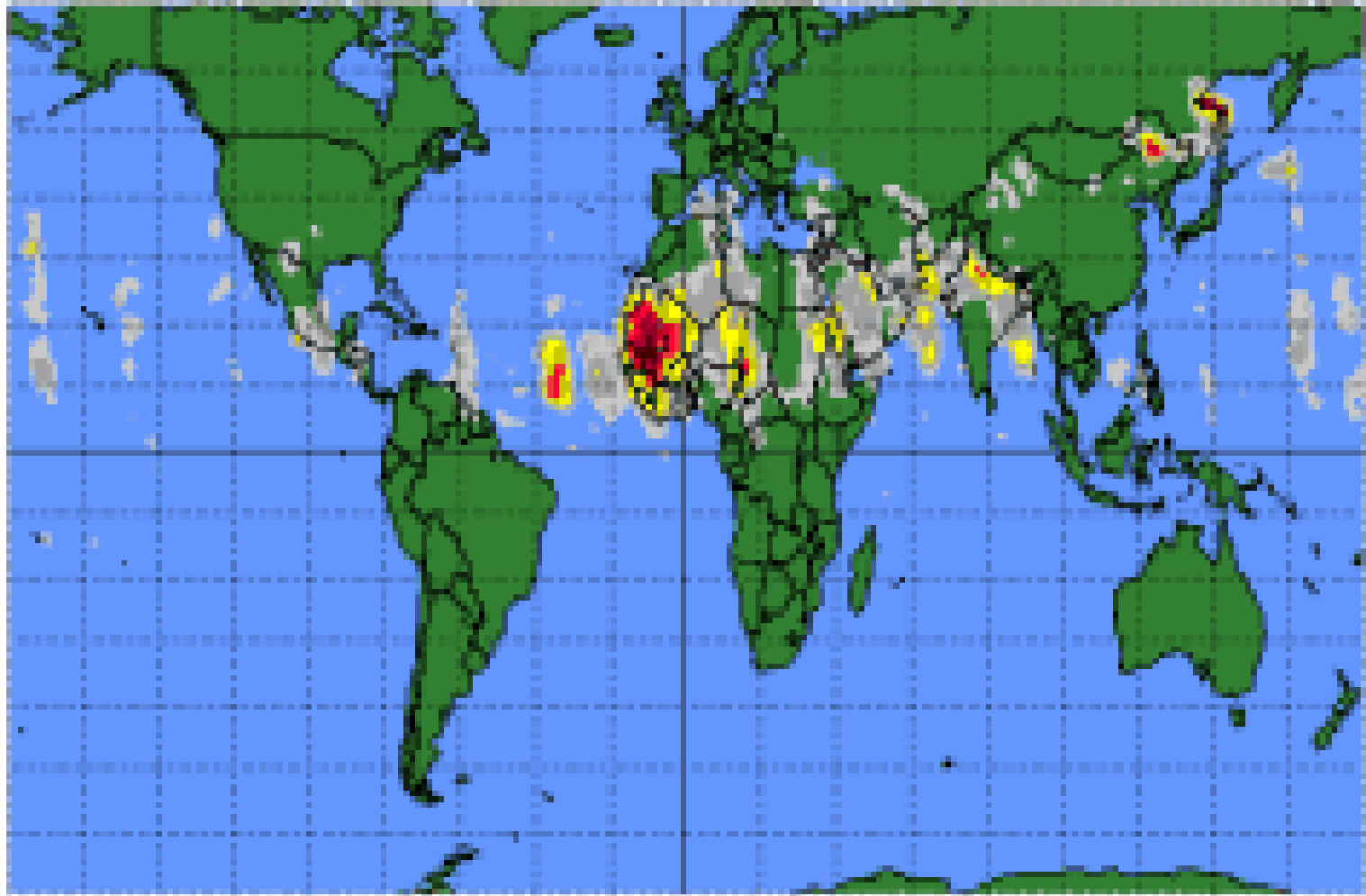


SeaWiFS Image of the dust storms off northwest Africa
Acquired on Monday, 28 February 2000

26 Feb 2000



Earth Probe TOMS Aerosol Index on May 03, 2003



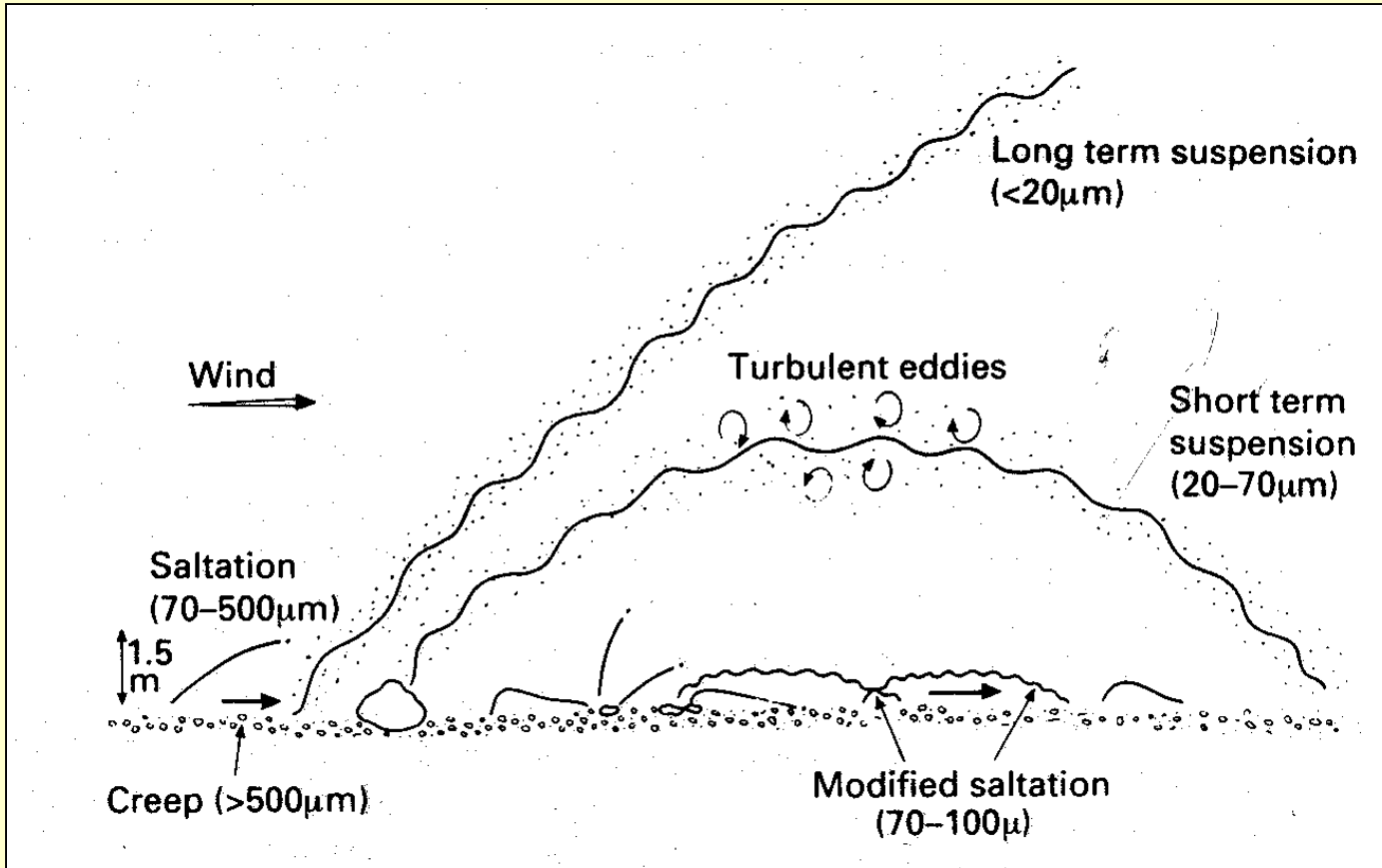
Goddard Space
Flight Center





dust
swirls
above the
Hellas Basin

Grains transportation by wind



الزحف والدحرجة

Rolling

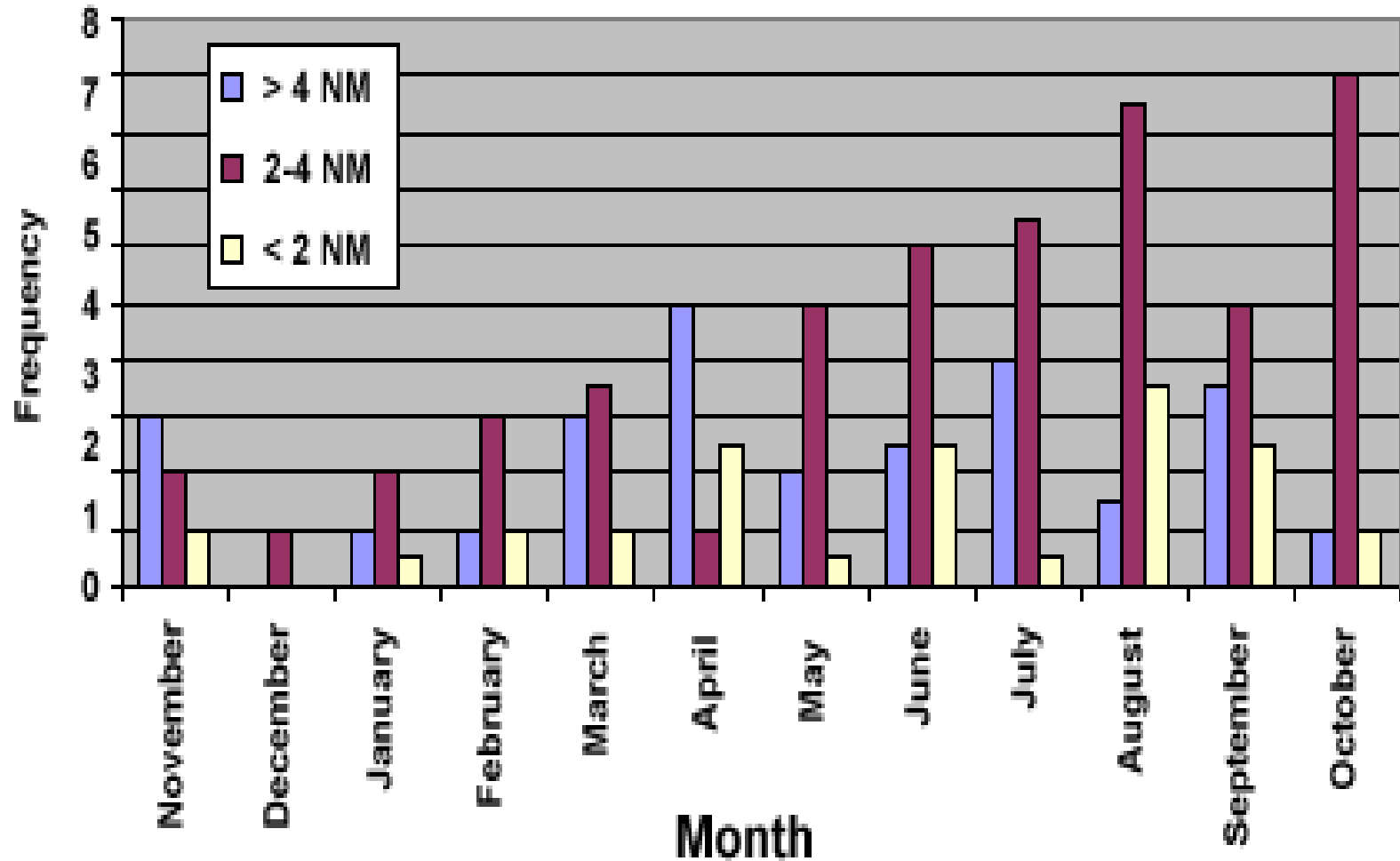
الوثب

Saltation


التعلق

Suspension

Monthly Frequency of Dust Storms in Iraq and Kuwait, by Visibility

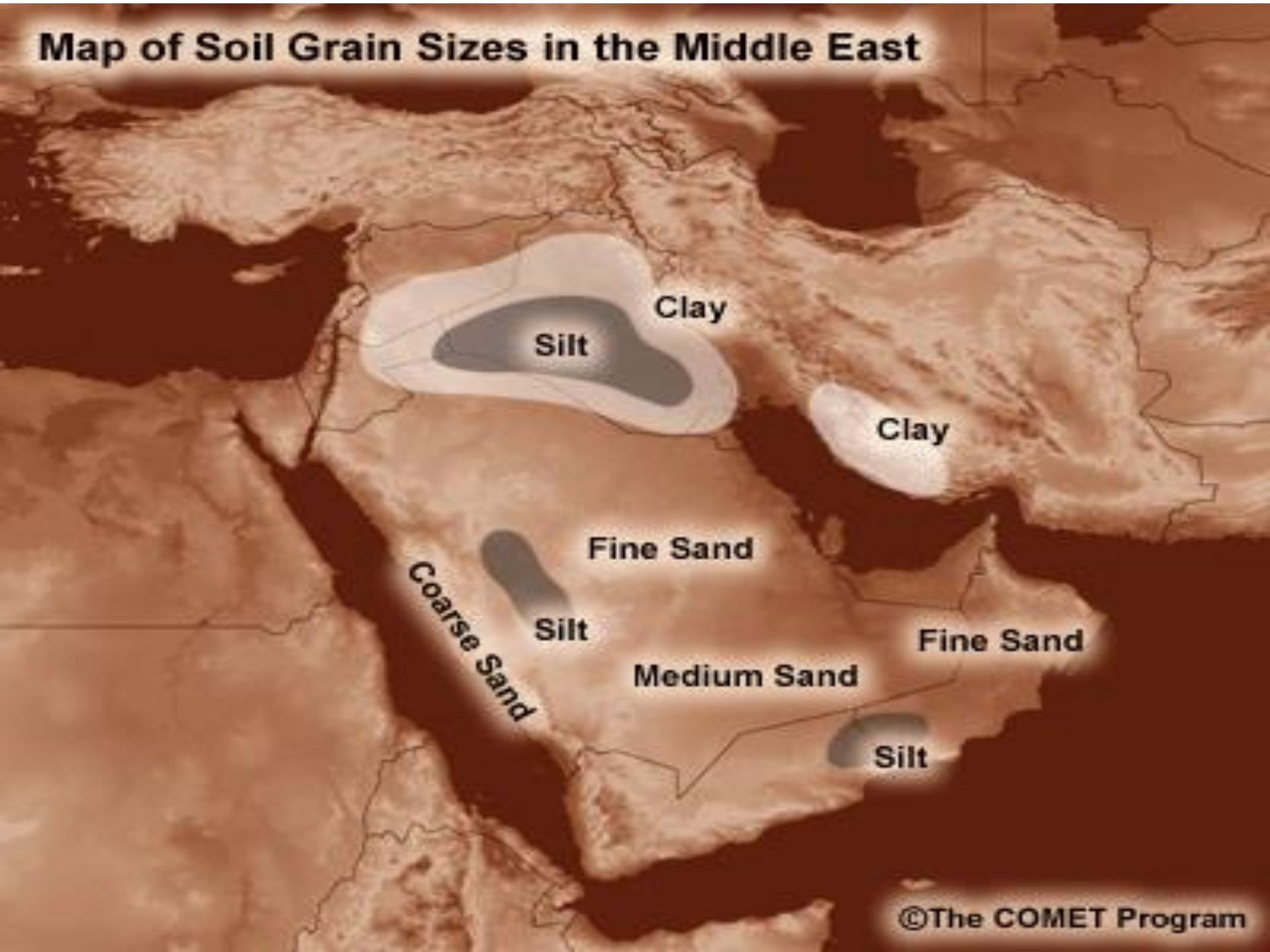


Texas Haboob

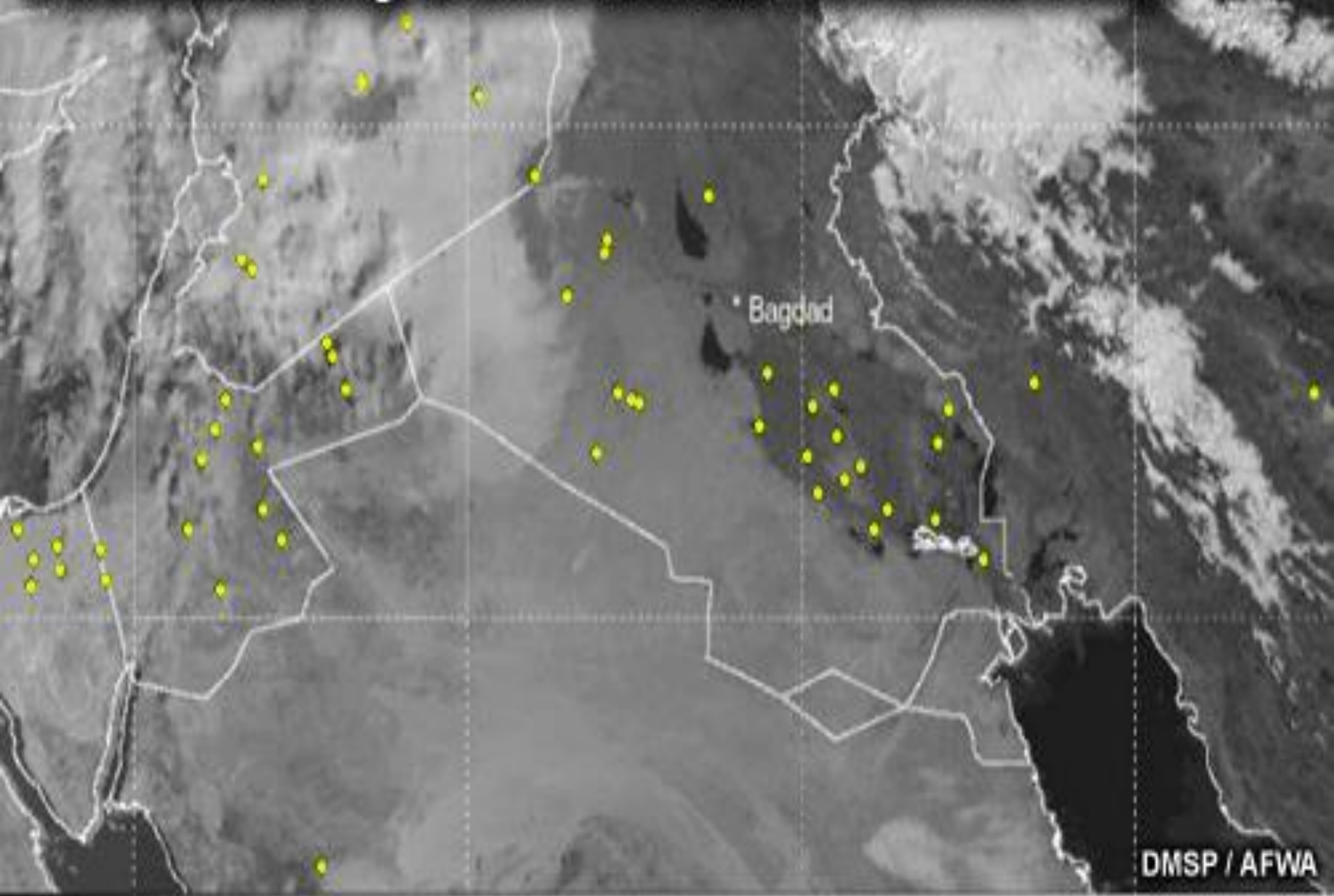
A photograph capturing a massive haboob dust storm in Texas. The sky is filled with dark, heavy clouds, and a thick, towering wall of dust and sand rises from the horizon, partially obscuring the sun. The foreground shows a dirt road curving through a grassy field. The overall atmosphere is dark and ominous.

NOAA / NWS

Map of Soil Grain Sizes in the Middle East



Visible Satellite Image of Middle East with Point Sources of Dust



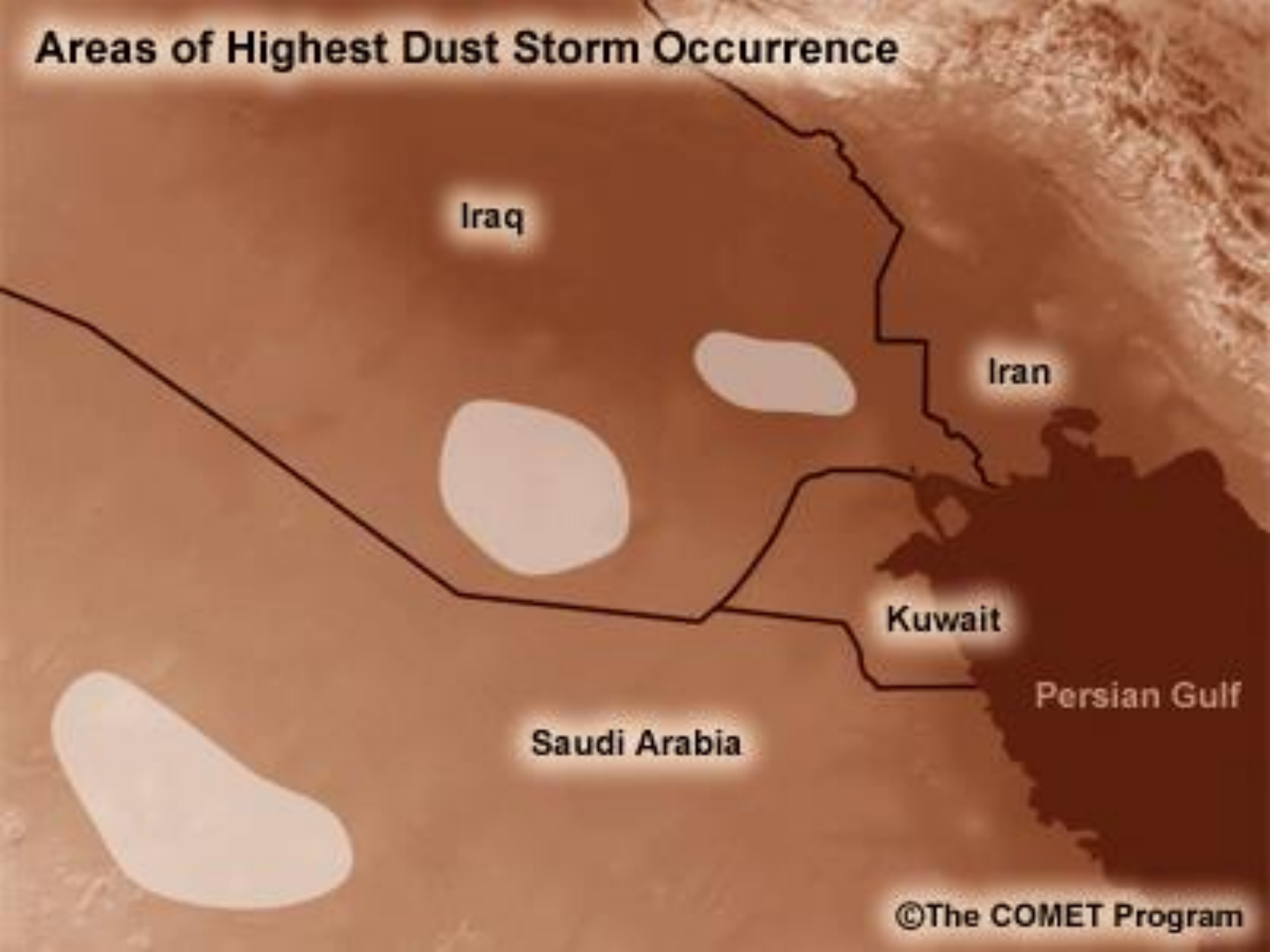
DMSP / AFWA

Dust Storm Approaching Melbourne, Australia



Australia Bureau of Meteorology

Areas of Highest Dust Storm Occurrence



Iraq

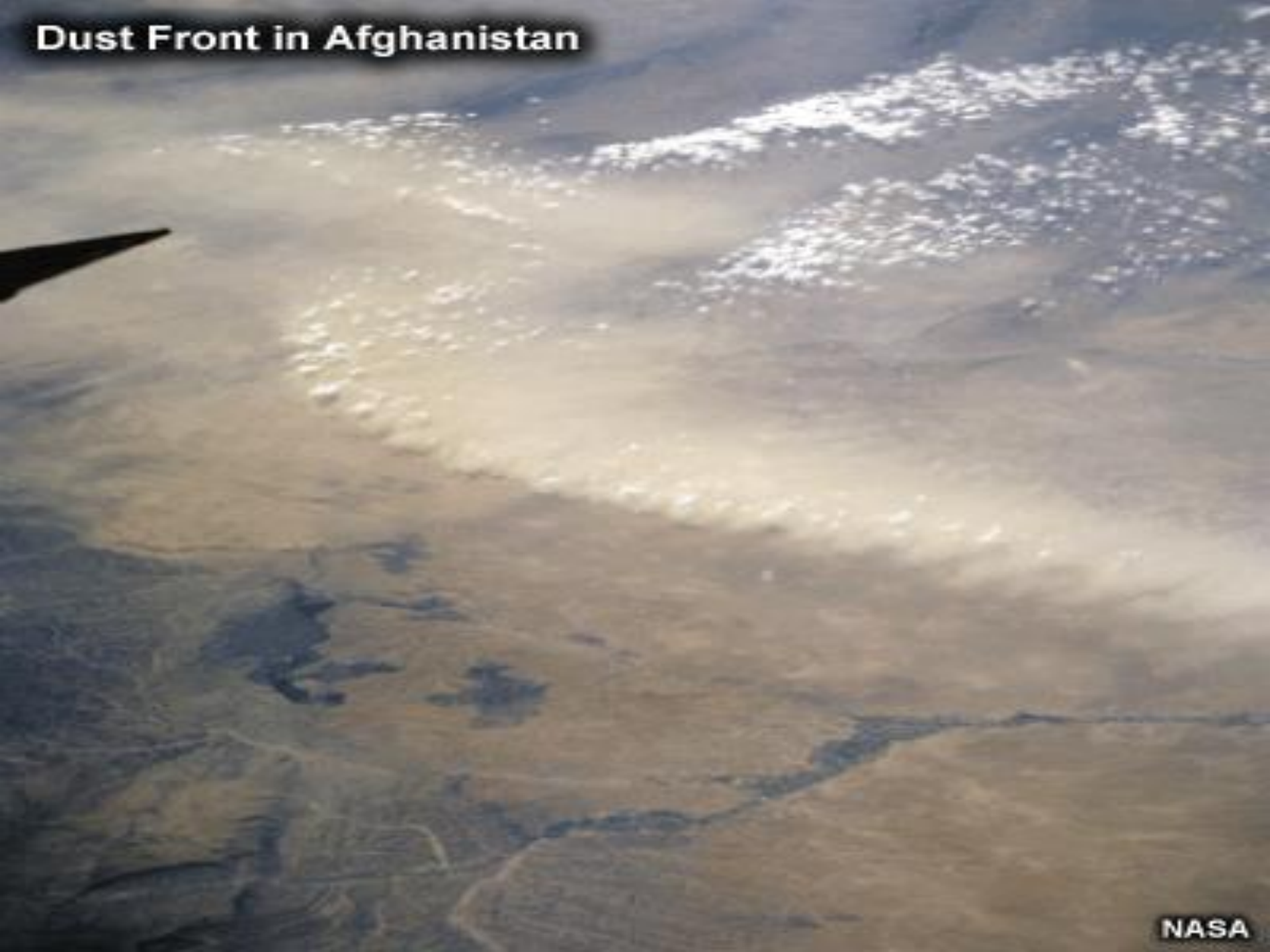
Iran

Kuwait

Persian Gulf

Saudi Arabia

Dust Front in Afghanistan

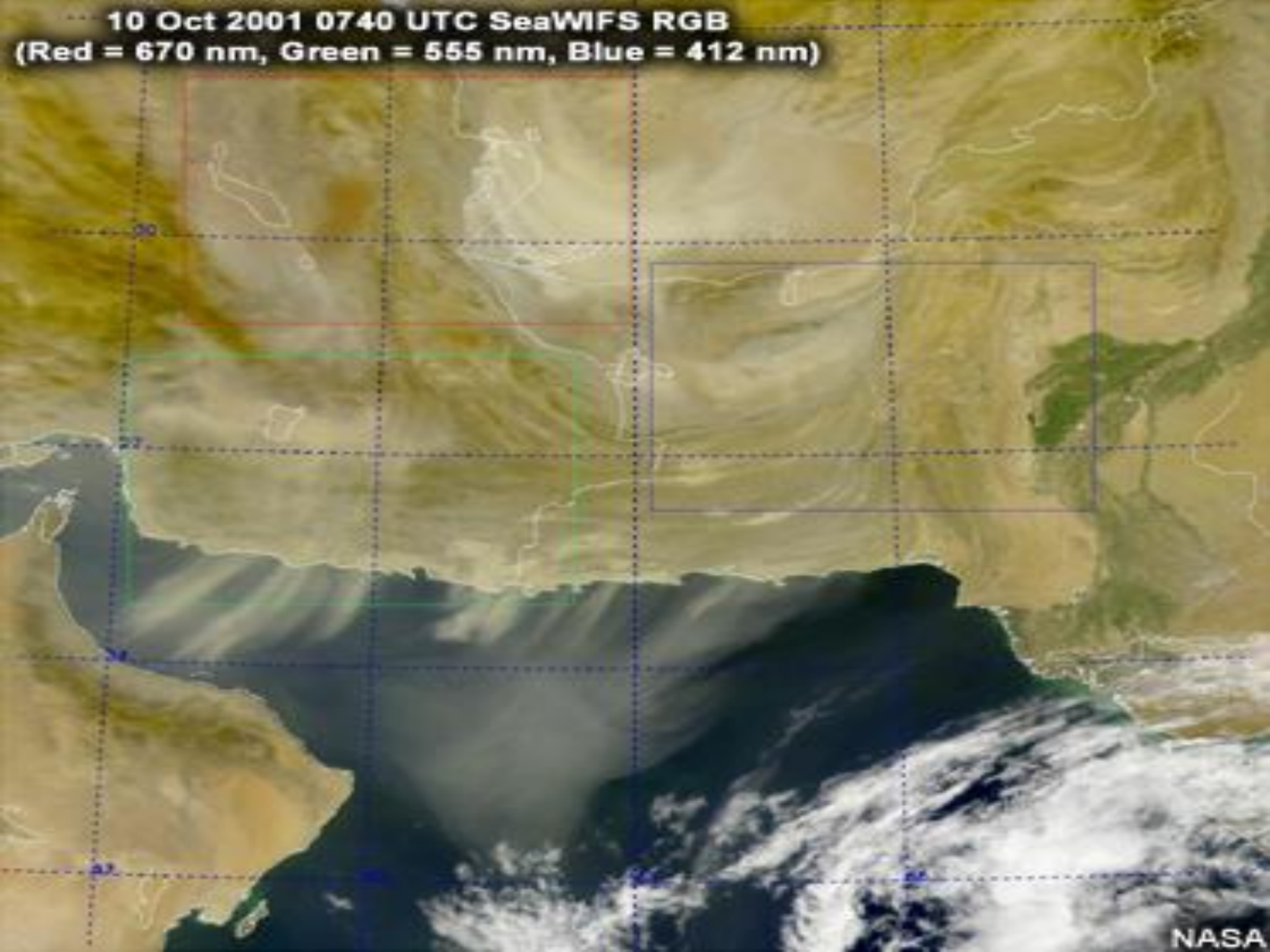


SeaWiFS True Color Image
05-Jul-99

A satellite image showing a large plume of yellowish-brown sediment or phytoplankton extending from the Gulf of Aden into the Red Sea. The plume is most prominent in the central and lower-left portions of the image. The surrounding water is a deep blue, and the landmasses are visible in shades of brown and tan. The image is a true-color representation of the satellite data.

NASA / Goddard Space Flight Center

10 Oct 2001 0740 UTC SeaWiFS RGB
(Red = 670 nm, Green = 555 nm, Blue = 412 nm)

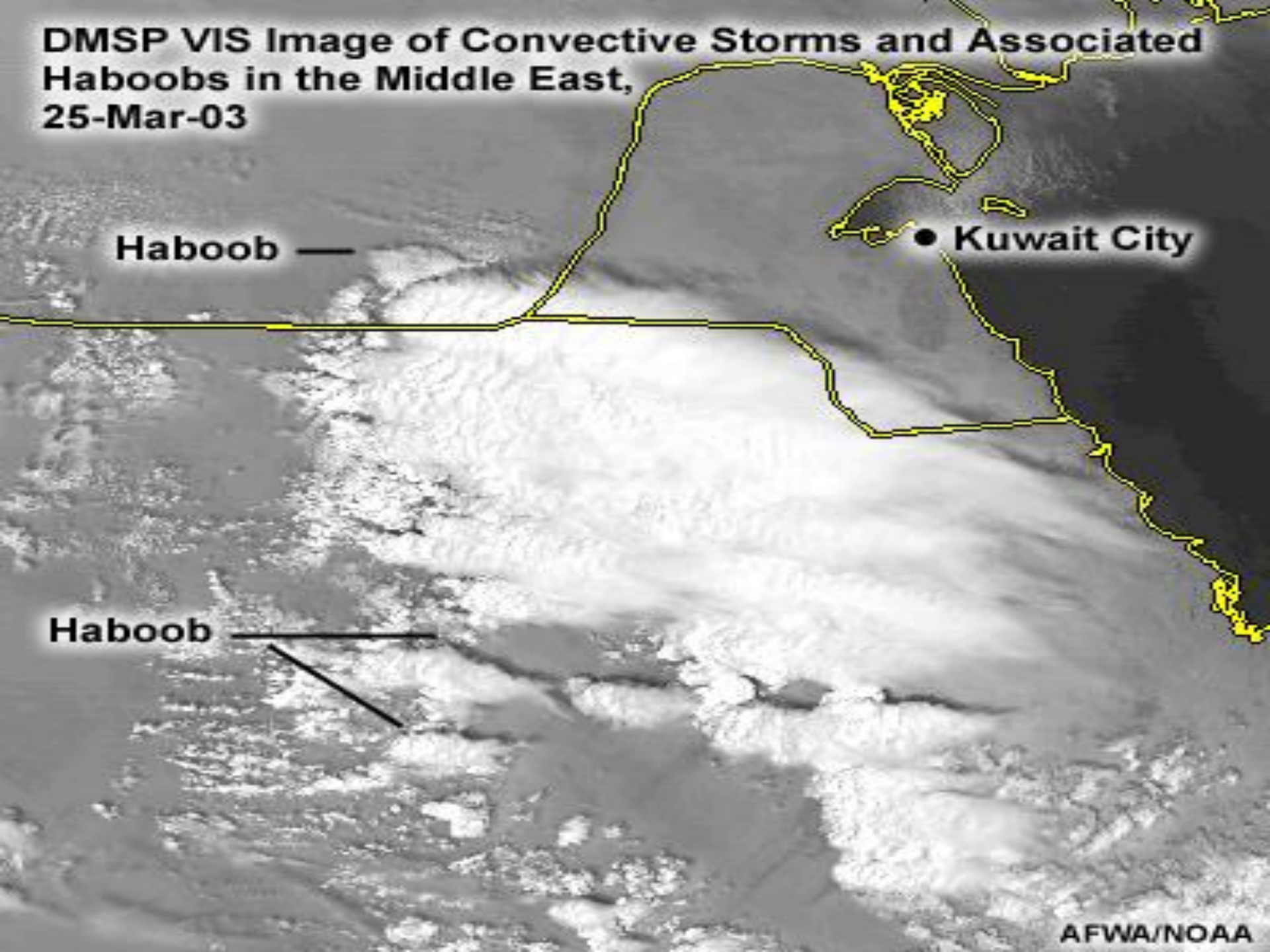


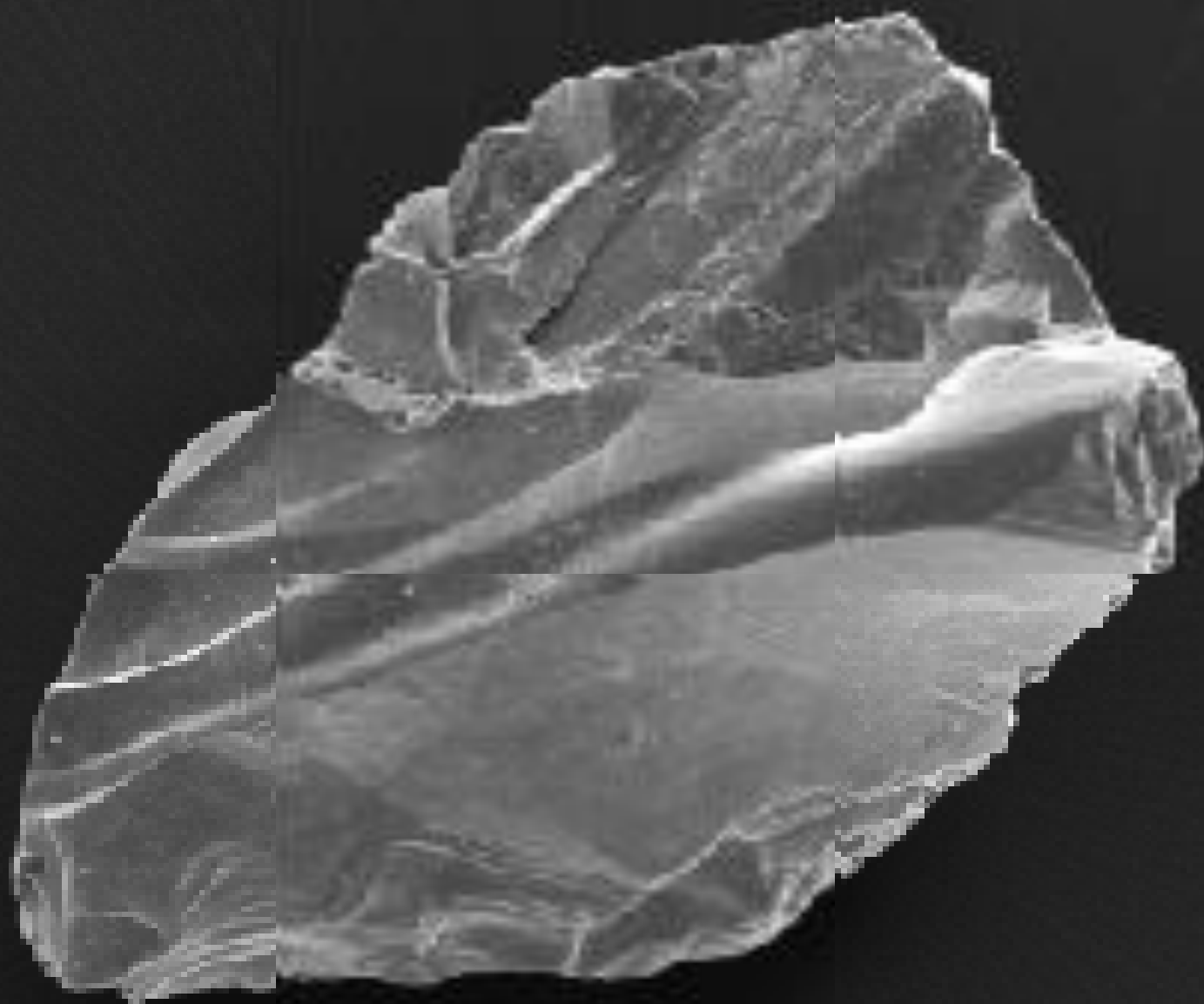
**DMSP VIS Image of Convective Storms and Associated
Haboobs in the Middle East,
25-Mar-03**

Haboob —

● **Kuwait City**

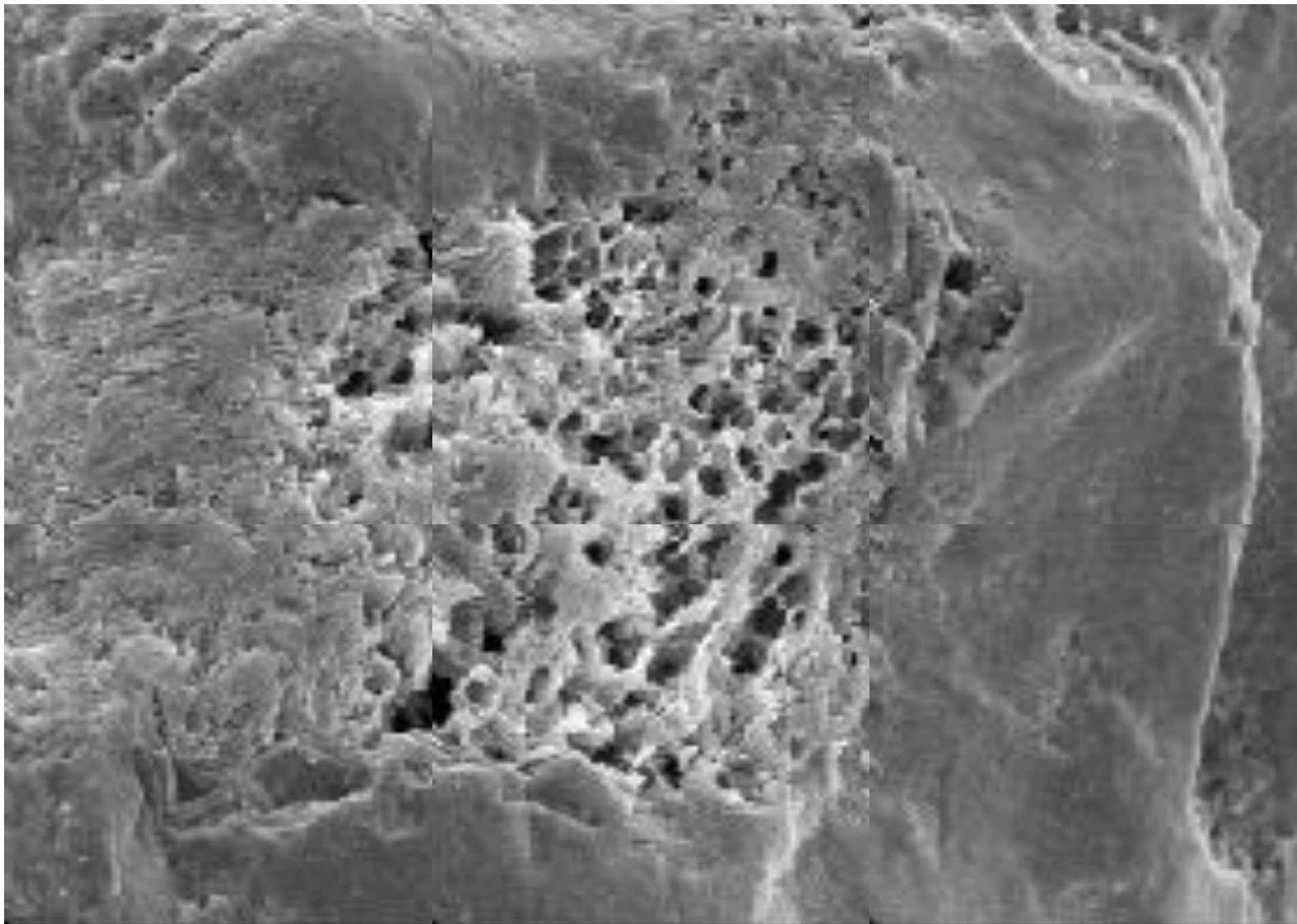
Haboob —





Specimen 1-27-3.3

200 μm



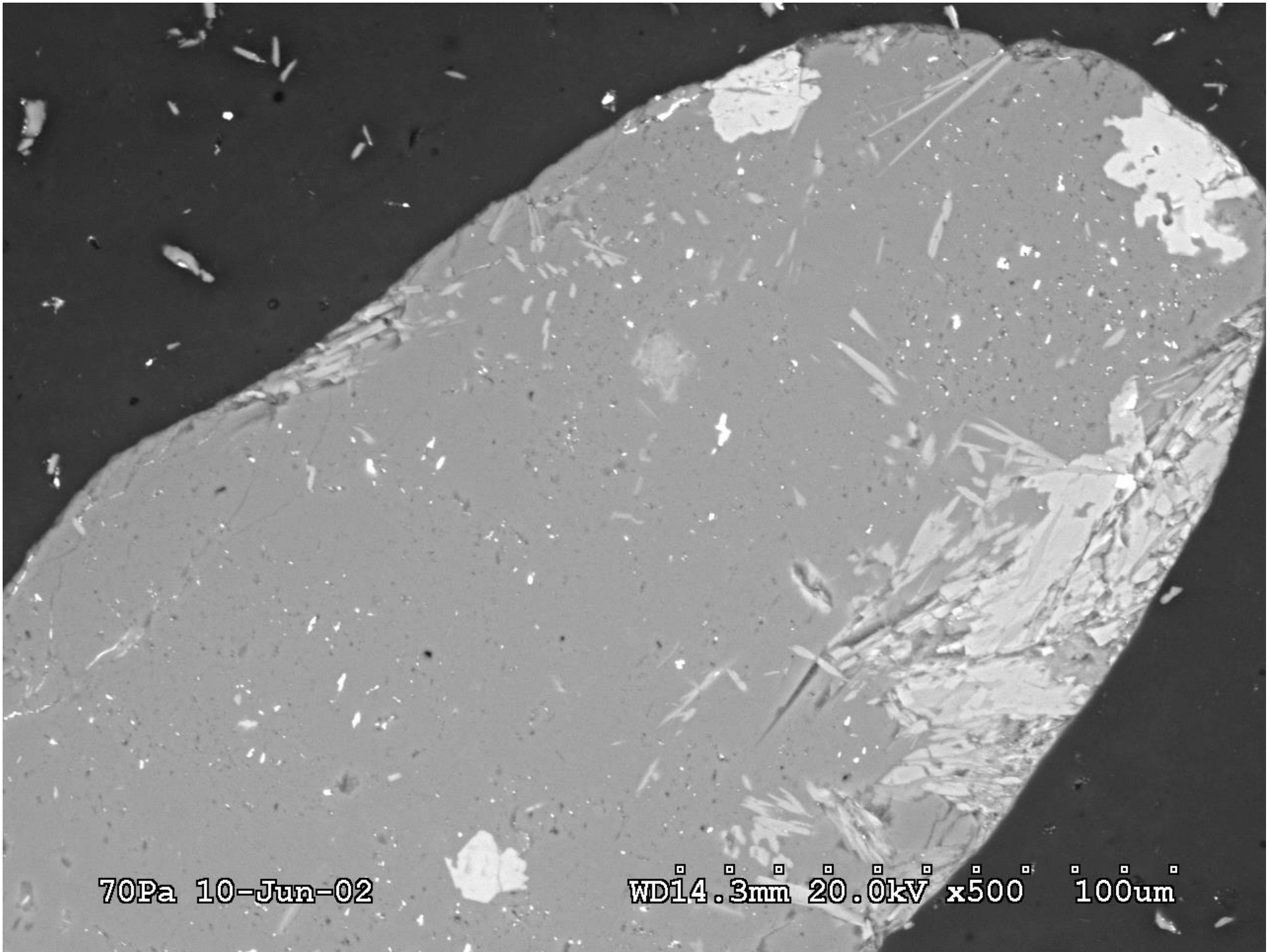
Specimen 2-67-4.4a

40 μ m



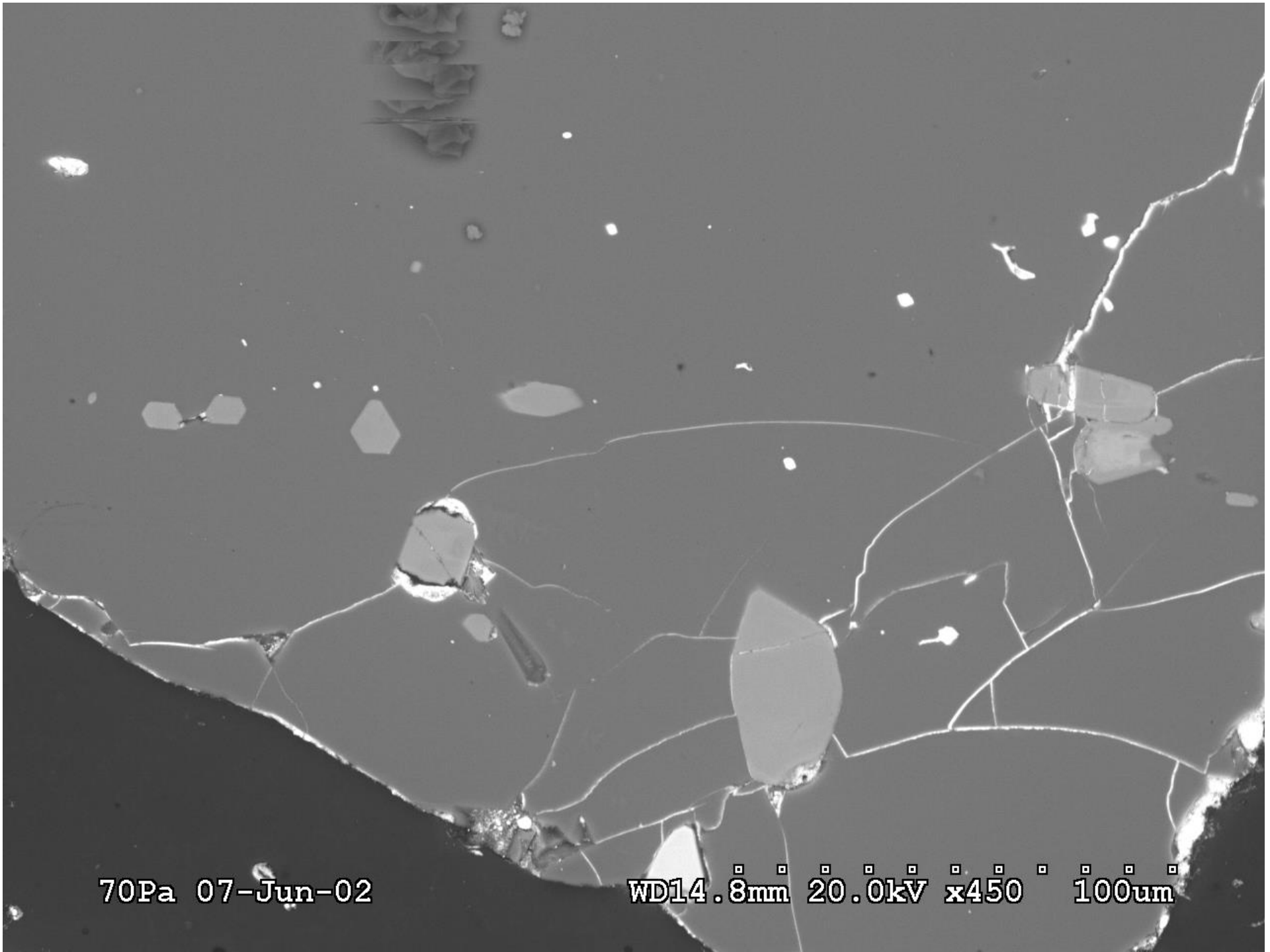
70Pa 11-Jun-02

WD15.5mm 20.0kV x800 50um



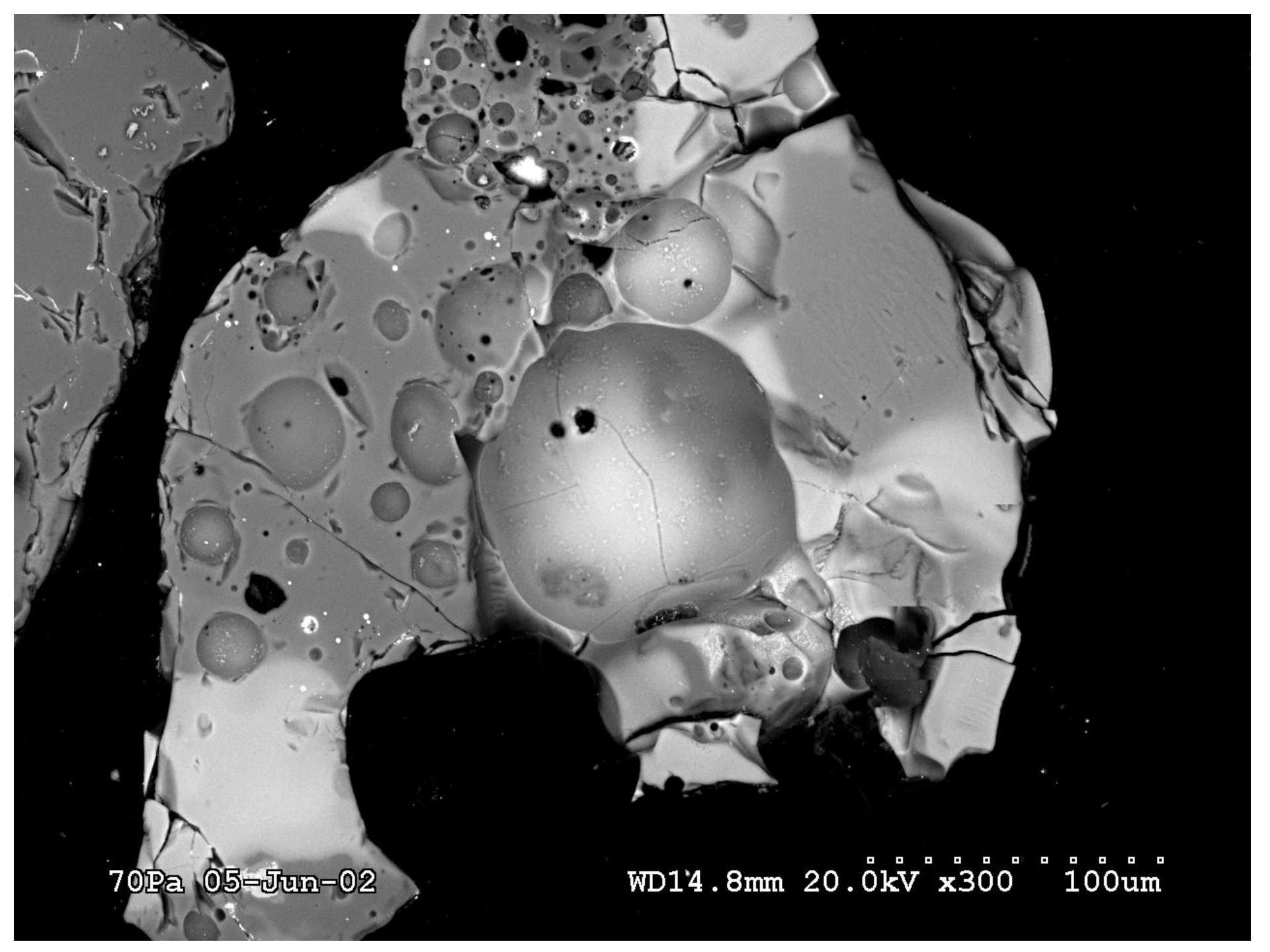
70Pa 10-Jun-02

WD14.3mm 20.0kV x500 100um



70Pa 07-Jun-02

WD14.8mm 20.0kV x450 100um



70Pa 05-Jun-02

WD14.8mm 20.0kV x300 100um

