

The determination of aerosol optical thickness over Germany using different satellite algorithms and instruments: an intercomparison study based on spectral top-of-atmosphere measurements of AATSR, MERIS, MISR, MODIS, POLDER, and SCIAMACHY

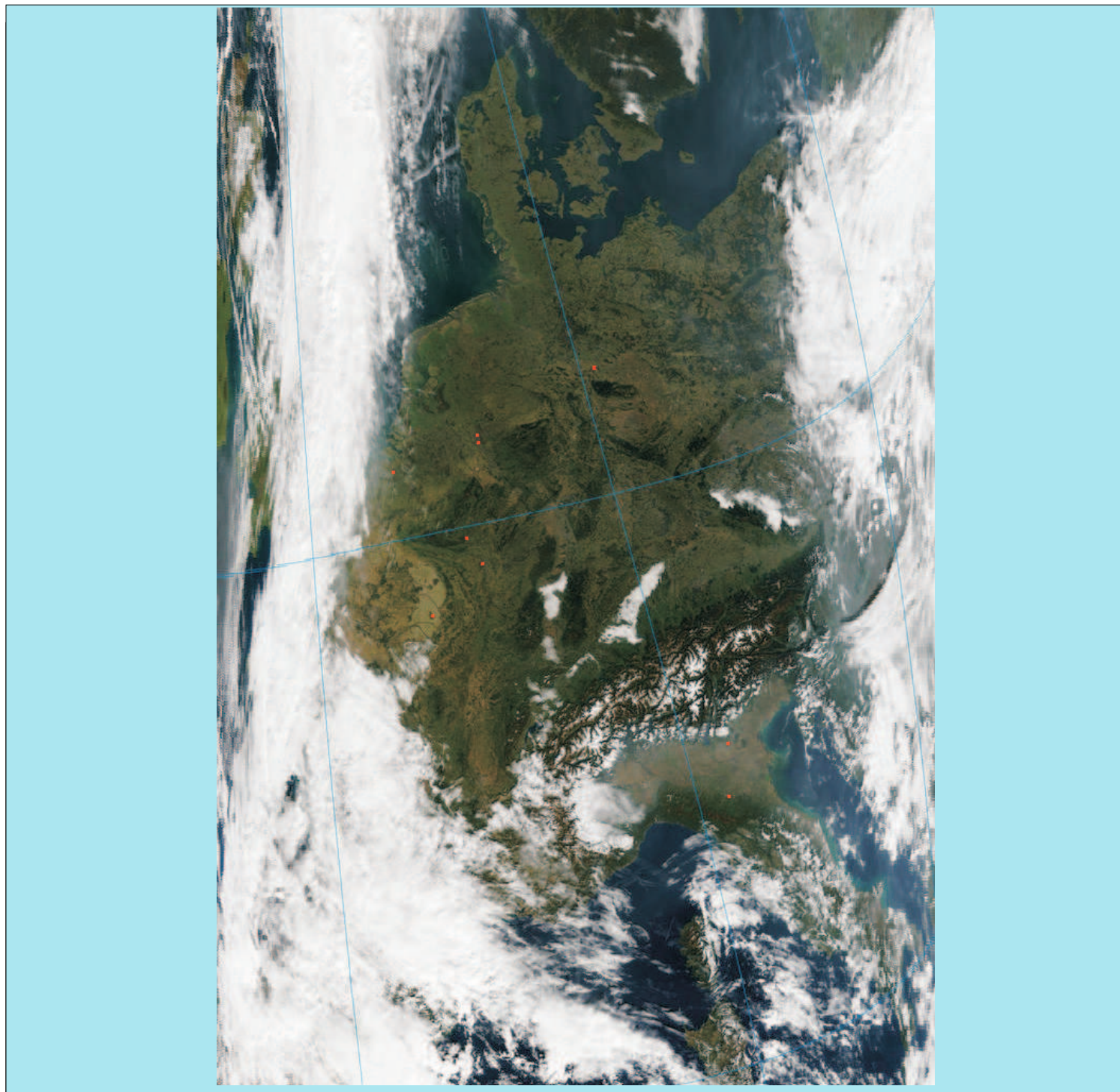


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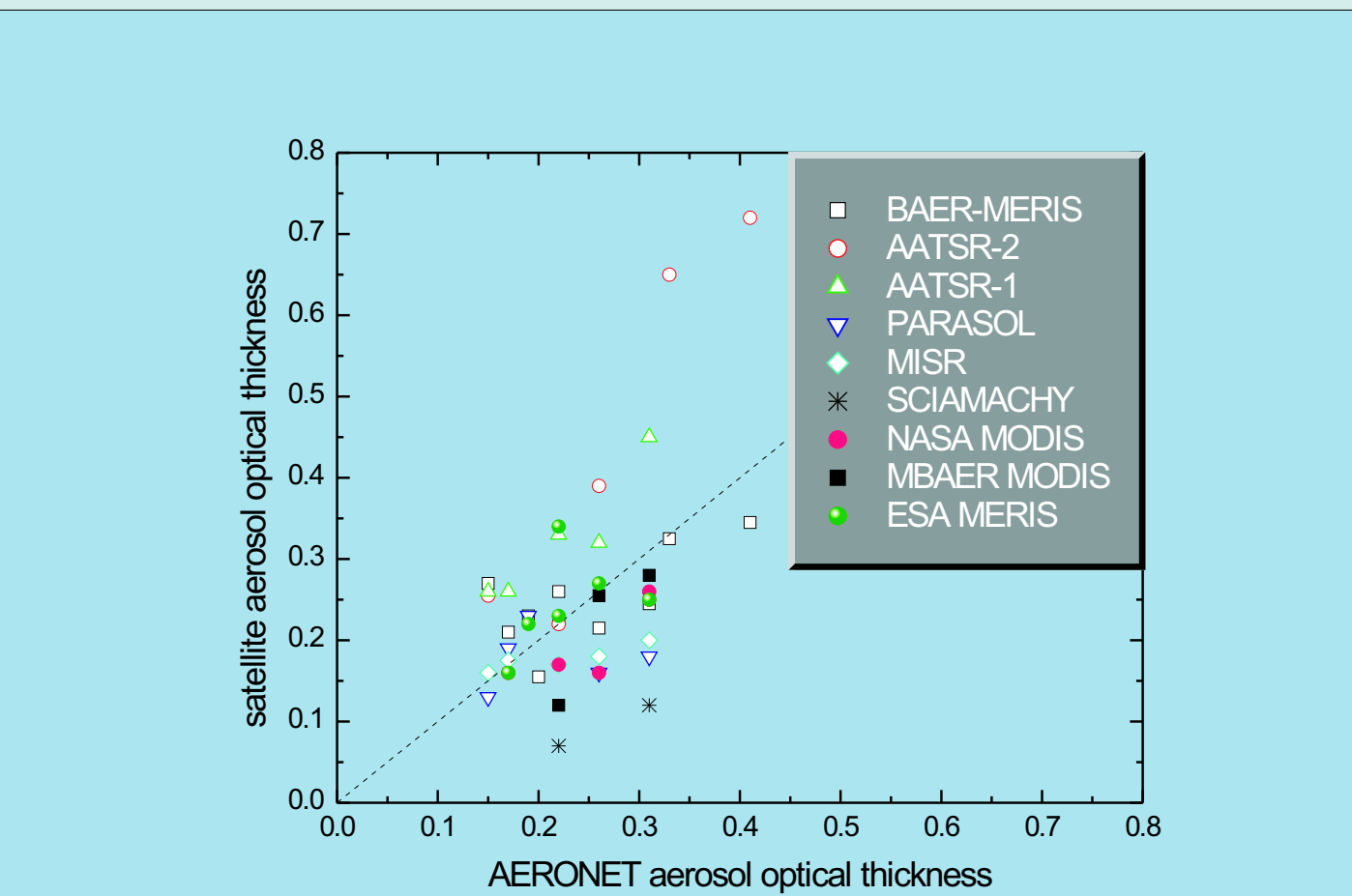
The authors have performed the intercomparison of satellite - derived aerosol optical thickness (AOT) at 550nm over Germany for a clear sky day of October 13th, 2005. Multiple instruments (AATSR, MERIS, and SCIAMACHY onboard ESA ENVISAT platform; POLDER-PARASOL(CNES); MISR and MODIS onboard NASA TERRA satellite) and algorithms developed in various laboratories around the world have been compared. Measurements have taken place

at 10:00 UTC (ENVISAT), 10:32(TERRA), and 13:33 (PARASOL). The region with coordinates in the range 7-12E, 49-53N was investigated. It was found that diverse instruments and techniques provide generally consistent values of AOTs. In particular, the average values of AOT in the area 9-11.5E, 52-52.5N were 0.15 for MODIS NASA algorithm, 0.16 for MISR JPL algorithm, 0.16 for PARASOL CNES algorithm, 0.2 for MERIS Bremen Aerosol Retrieval Algorithm(BAER),

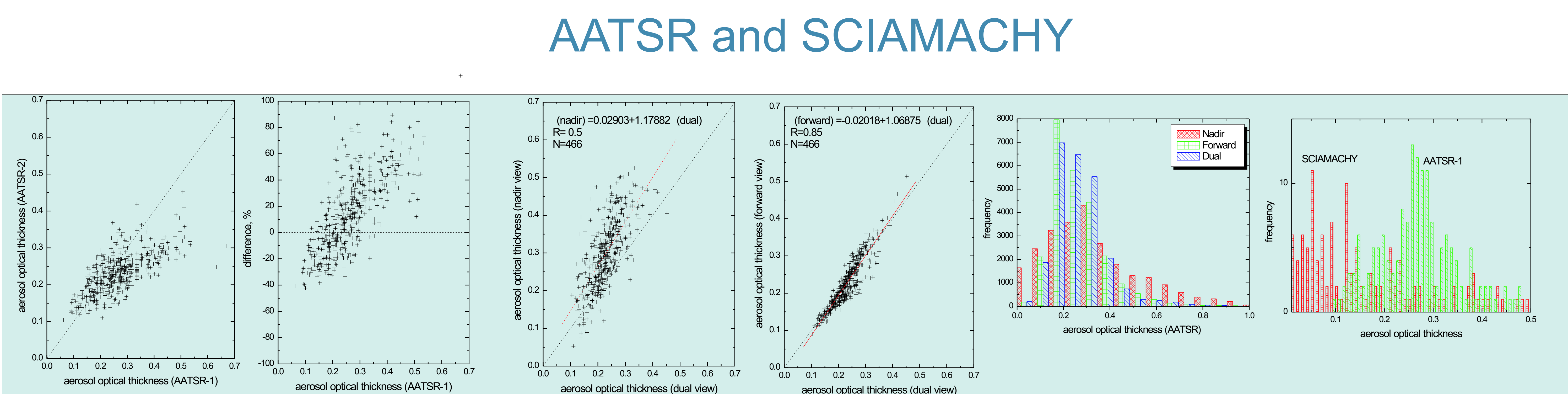
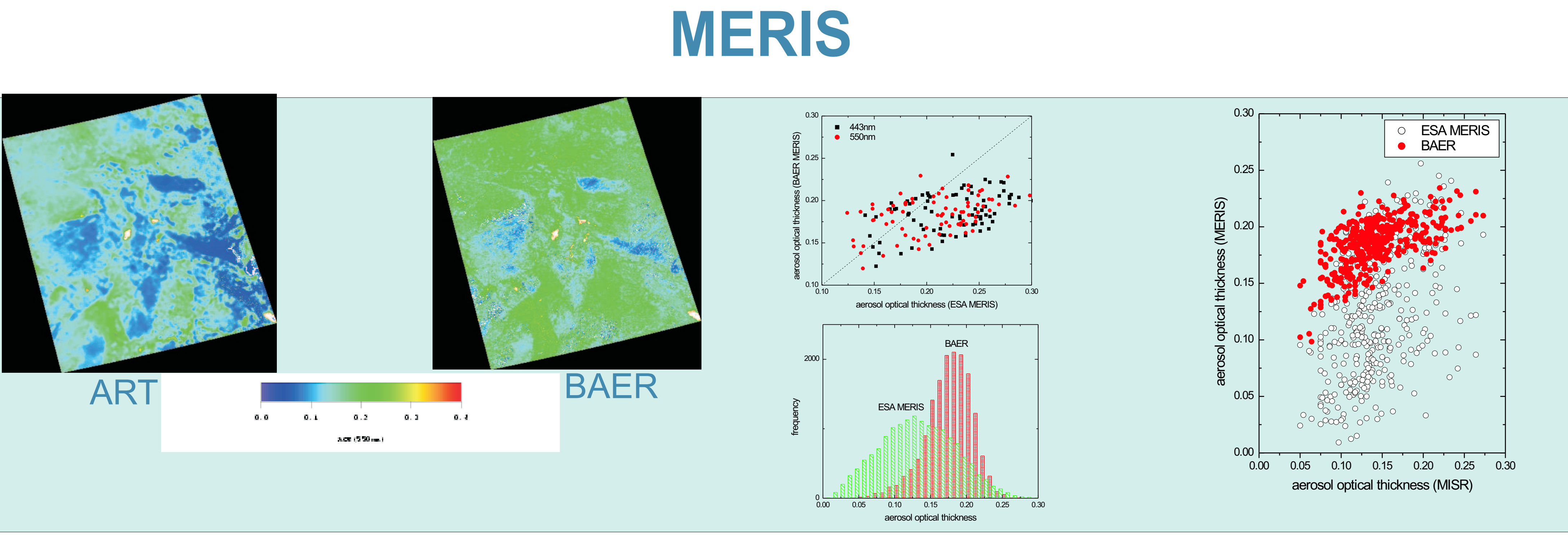
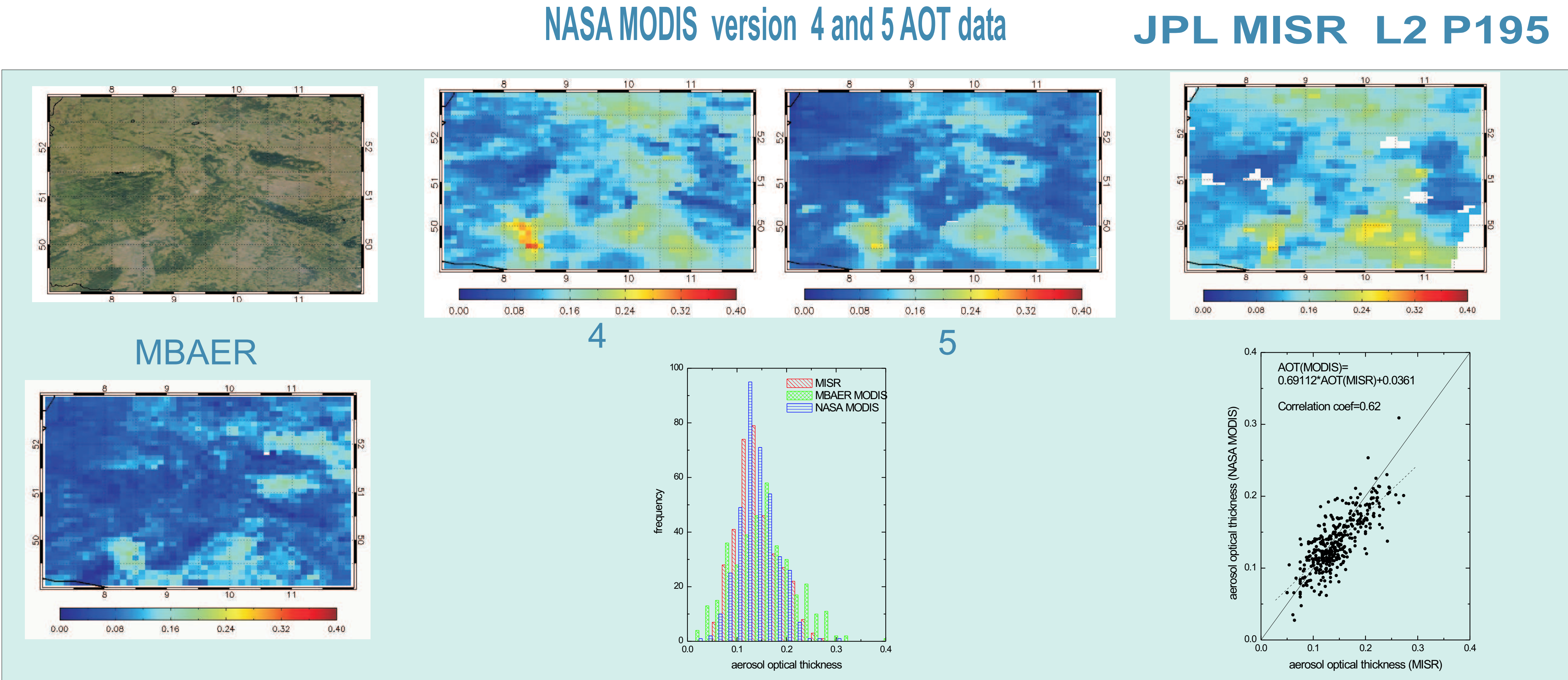
0.21 for MODIS Bremen Aerosol Retrieval Algorithm (MBAER), 0.21 for MERIS ESA algorithm, 0.22 for AATSR Oxford University algorithm, and 0.3 for Swansea University algorithm. The retrievals using SCIAMACHY are biased (too low values of AOT) due to the calibration problems. It is believed that the Processor 6 SCIAMACHY data will be considerably improved. However, there are also some differences in the results. They are discussed in this paper.



The analysed satellite scene (MODIS browse image of October 13, 2005)



The comparison with AERONET



AATSR1: SWANSEA UNIVERSITY
AATSR2: OXFORD UNIVERSITY

SCIAMACHY: CNR-ISAC, Bologna

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