Jason-2 Wet Tropospheric Coastal Performance

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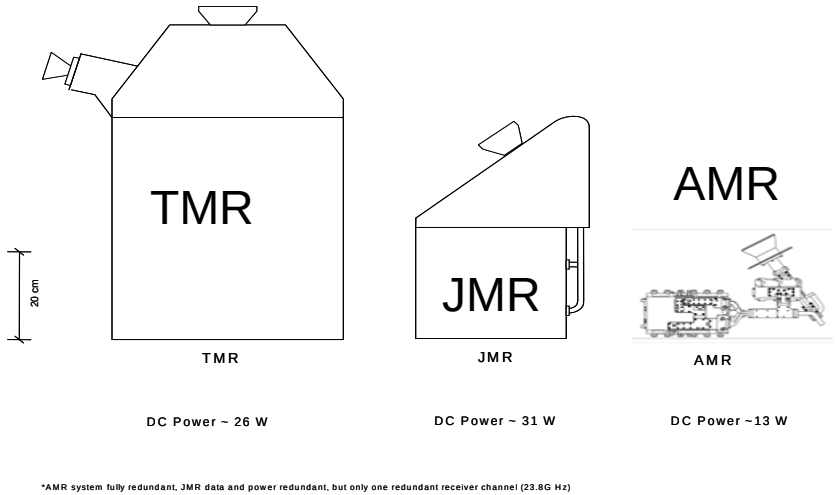
JPL

Jason-2 Radiometer Improvements

Ocean Surface Topography Mission

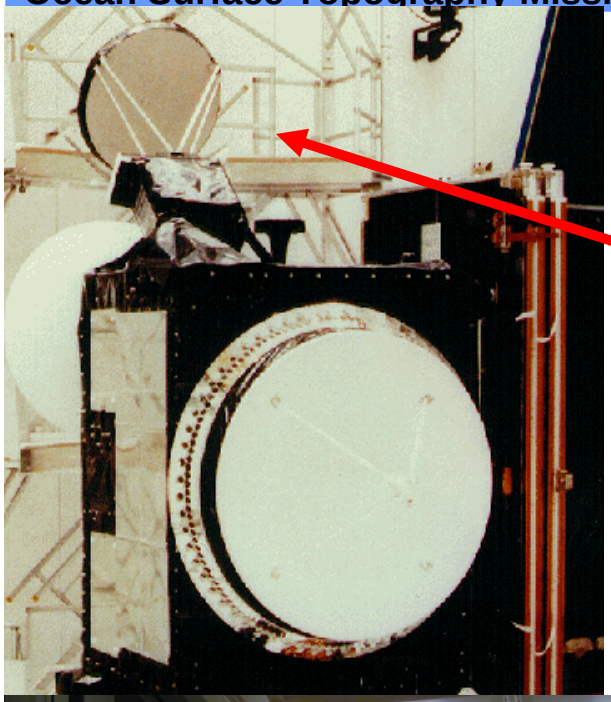
- Several significant improvements made to radiometer on Jason-2
  - AMR - Advanced Microwave Radiometer
- 1 meter, unblocked reflector to improve coastal resolution and reduce geographically correlated errors
  - Compared to partially blocked 0.6 m reflector for JMR/TMR
- Improved land flagging
- Improved beam matching algorithm



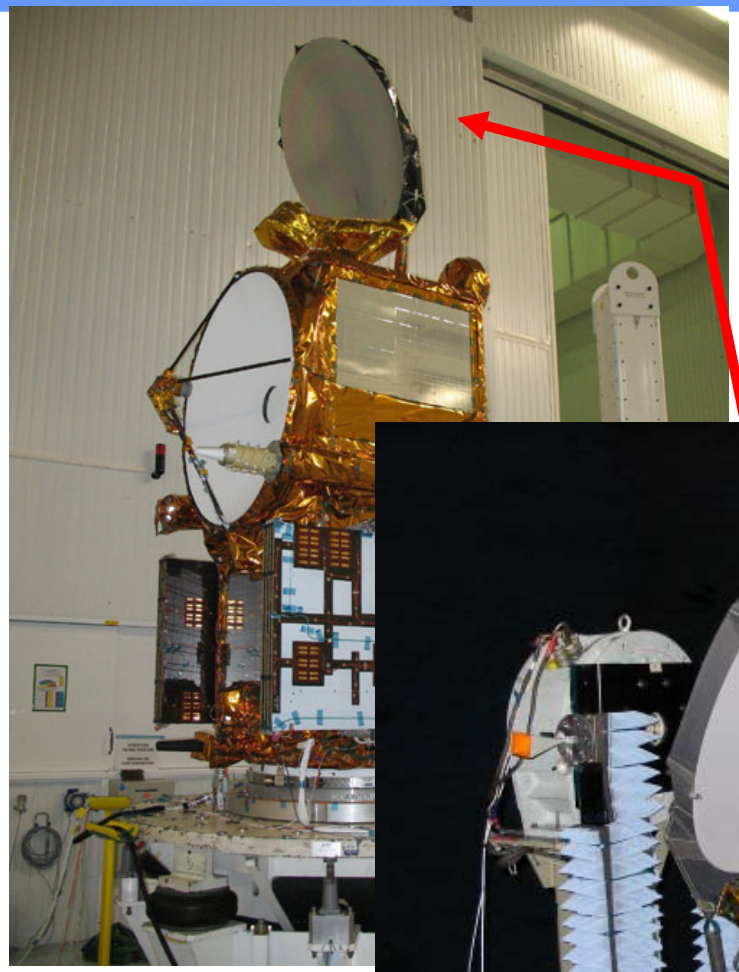
*AMR system fully redundant, JMR data and power redundant, but only one redundant receiver channel (23.8G Hz)

Jason-2 AMR

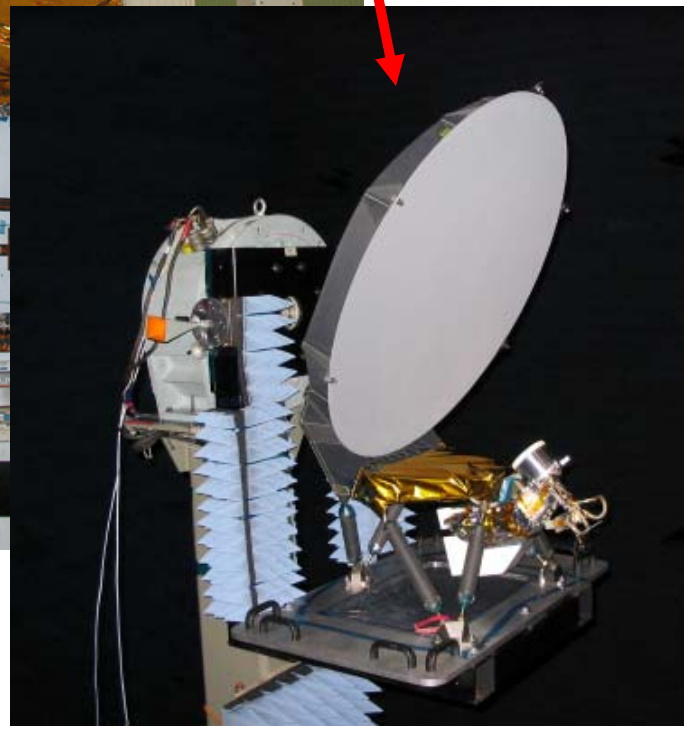
Ocean Surface Topography Mission

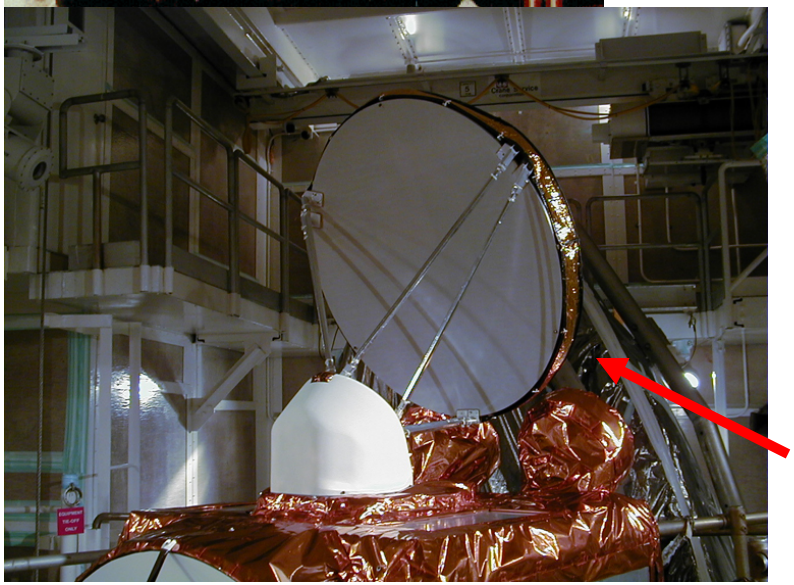


TMR



AMR



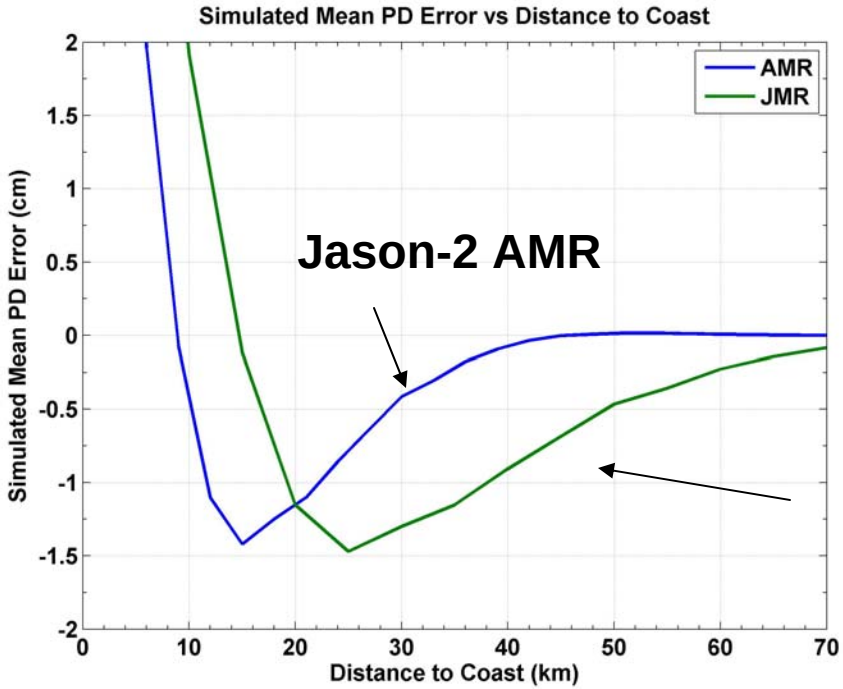


JMR

AMR Coastal Performance

- Spatial resolution nearly doubled from TMR and JMR
  - ~26 km for AMR compared to ~50 km for JMR/TMR

- 98-99% of energy received within 75 km of boresight, compared to about 92-93% for TMR/JMR



AMR Coastal Performance

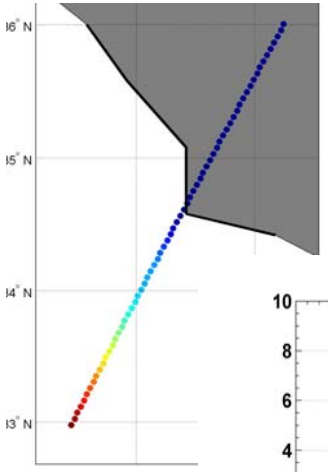
- AMR land flagging algorithm based on beam weighted land fraction in the main beam, instead of a constant radial distance to land
  - Not all land is equal
  - Flags data that will have errors > 5 mm

- AMR beam matching algorithm matches beams to 23.8 GHz footprint, instead of degrading resolution of all channels to the 18.7 GHz footprint

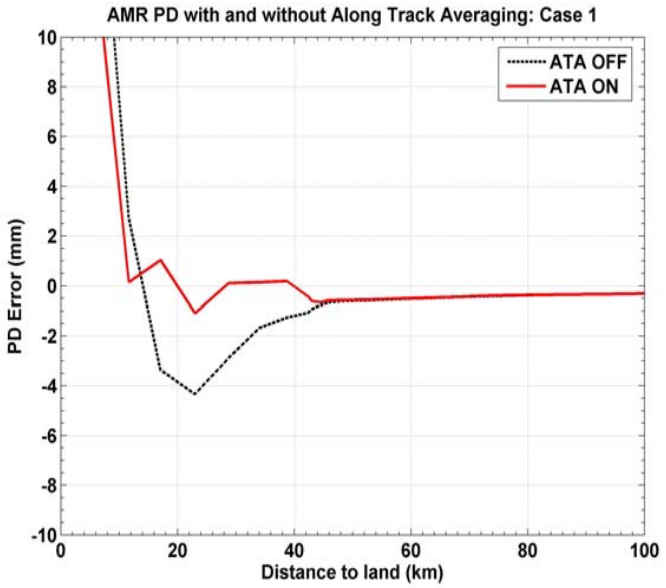
Coastal Performance

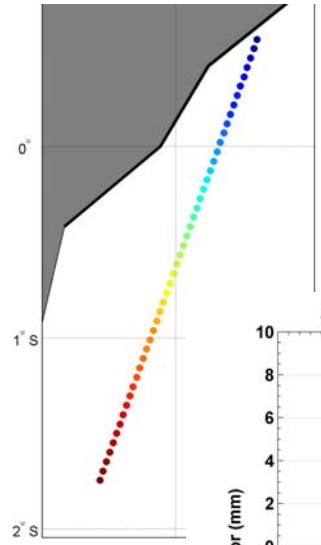
Ocean Surface Topography Mission

- Along track averaging can improve coastal approach for preferred land/ground track orientations
- Additional improvements may be made through correction algorithms based on pattern weighted main beam land fractions
  - CLS (PISTACH) and JPL (proposed to OSTST)



~10 km approach at Harvest estimated for AMR





~20-25 km approach estimated for worst case