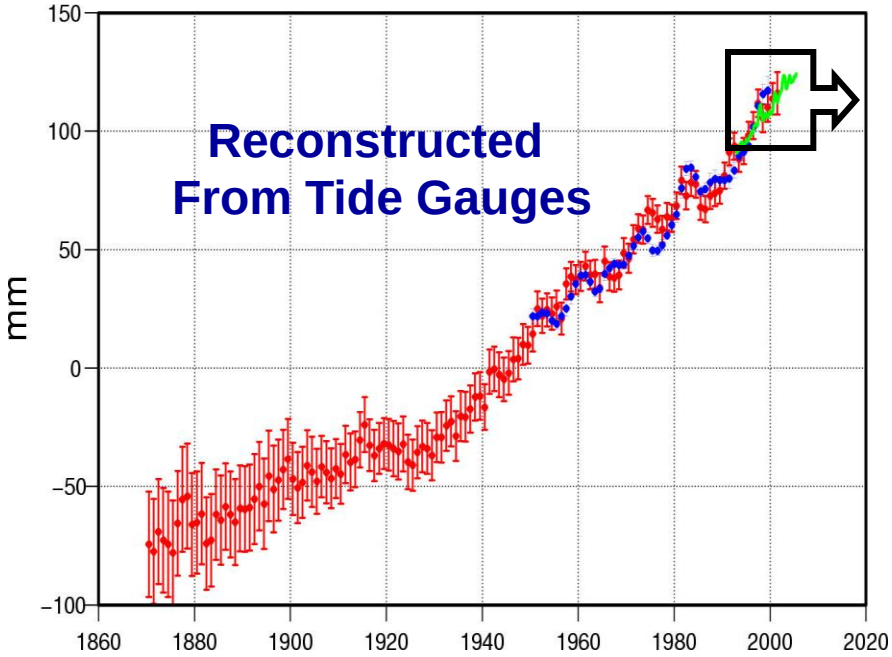
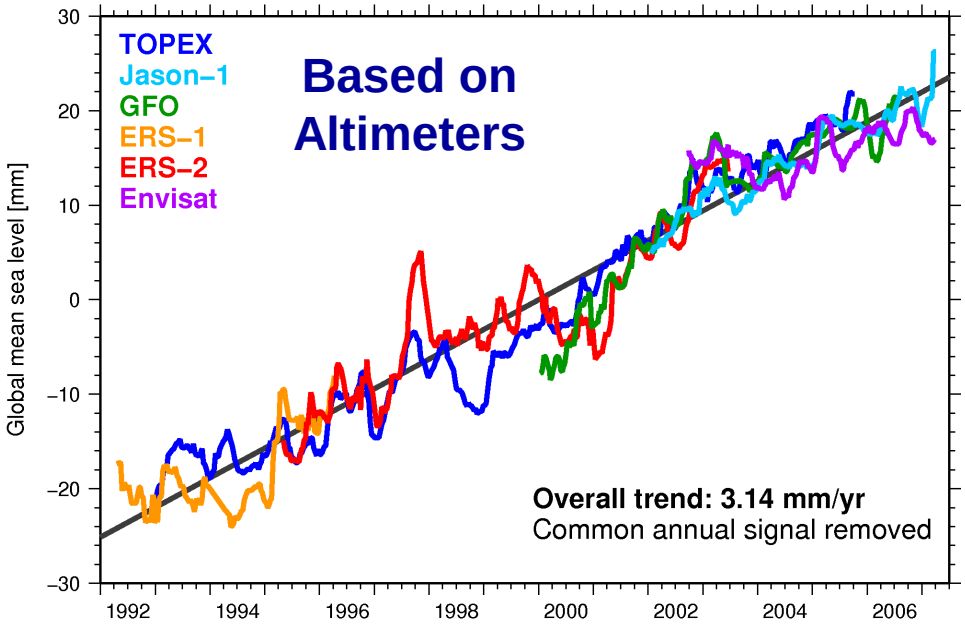
Satellite Altimetry is the Only Feasible Way to Measure Global Sea Level Rise

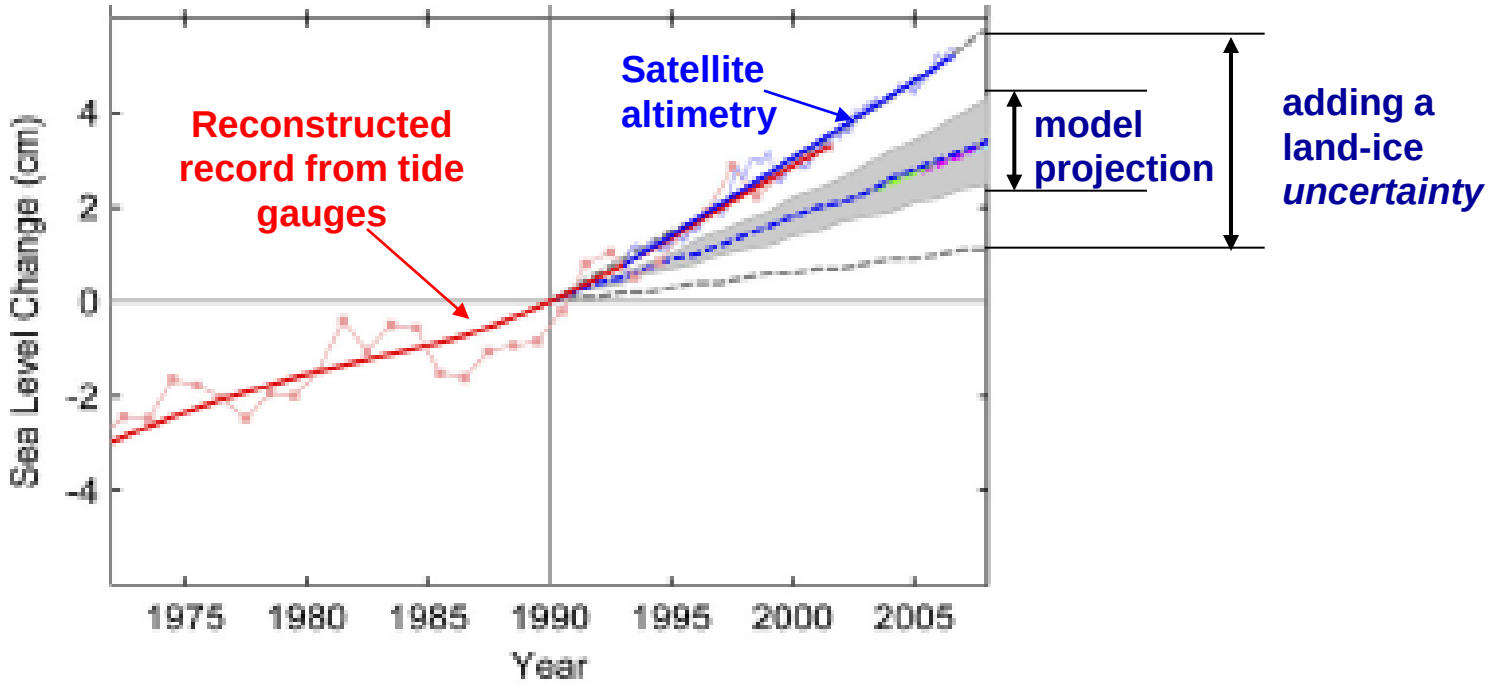
Mean Sea Level has been rising at an increasing rate:
~1.7 mm/yr 1870-2000
~3.1 mm/yr since 1992





IPCC AR4 projection:
~30-80 cm by 2100

Observed Sea Level is Rising at the Upper Limit of the TAR Projection



AR4: "Understanding of some important effects…is too limited…Therefore, <u>the upper values of the ranges…are not to be considered upper bounds for sea level rise</u>"

146,000,000 worldwide live within 1 meter of MHW

Guerin, Thorp & Thompson (2007) www.architecture2030.org

Hollywood, FL – Population Impacted 140,000

Miami Beach – Population Impacted 88,000

Ocean Surface Topography Constellation

CNES, ESA, EUMETSAT, ISRO, NASA, NOAA, SOA & US Navy

- **Goal**
  - Implement a sustained, systematic capability to observe the surface topography of the global oceans
  - To address global sea level rise and the role of the oceans in climate, as well as support operational forecasting
- **Approach**
  - Maintain continuity of the high-accuracy Jason altimetry time series
  - Maintain continuity with altimeters on at least two complementary, high-inclination satellites
  - Extend the capability of altimetry to denser observational coverage through the development of swath altimetry

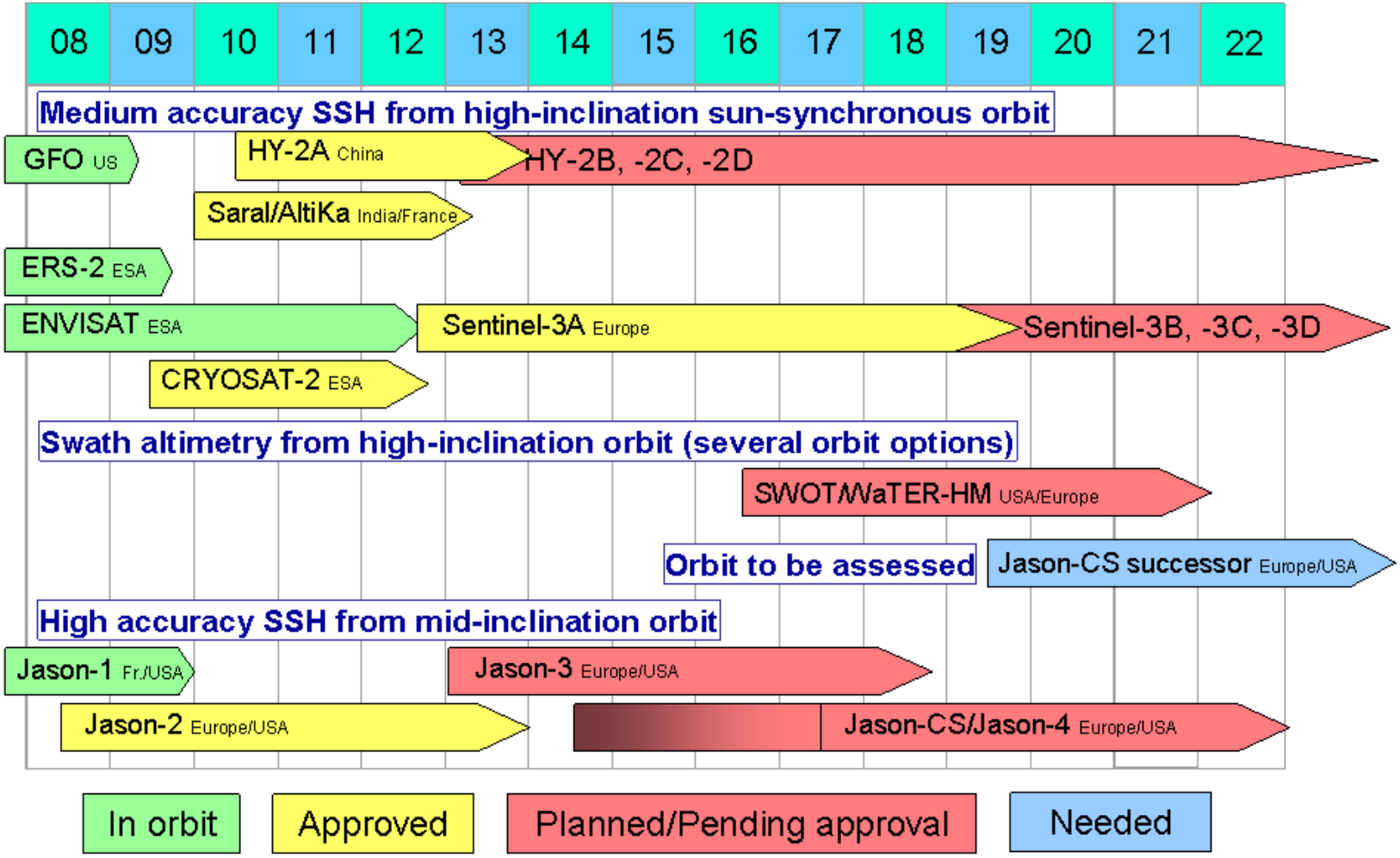
Progress since Plenary

- Altimeter missions in orbit
  - **Jason & ENVISAT – performance OK**
  - **GFO – power too low in eclipse; reaction wheel too hot in full sun**
- Missions in development
  - **OSTM/Jason-2 – OK for launch 15 June 2007**
  - **CryoSat-2 – good progress for launch in 2009**
  - **SARAL – CNES payload due Sept/Oct, launch late 2009/early 2010**
  - **HY-2A – CNES/SOA negotiations re: DORIS; launch in June 2010**
  - **Sentinel-3A – good progress for launch in 2012**
- Missions in planning
  - **Jason-3 – EUMETSAT, NOAA, CNES, ESA & EC to resolve approach and seek funding for an OSTM/Jason-2 follow-on**
  - **OST Constellation Workshop (29-31 Jan 2007) developed 15-year strategy; Invitation to Tender issued for a *Missions Requirements Document for the Constellation* with report due 1 Dec 2008**
  - **SWOT – *Workshop on Mesoscale Oceanic Processes: Explorations with Wide-Swath Interferometry Radar Altimetry,* 28-30 April 2008, at Scripps; NASA/CNES Feasibility Study to start shortly**

Requested SIT and CEOS Support

- *Help resolve the approach and secure funding for an OSTM/Jason-2 follow-on in time to provide continuity of the Jason-quality data stream*
- *Be prepared to respond to the Mission Requirements Document for the Constellation when it comes available 1 Dec 2008*
- *Engage key officials of the State Oceanic Administration to collaborate in altimetry*

Ocean Surface Topography Constellation Roadmap



From OST Strategic Planning Workshop, Assmannshausen, 29-31 Jan 2008