John
Fasullo
NCAR
Carmen Boening, JPL
Felix Landerer, JPL
R. Steve Nerem, University of Colorado
Oral
In 2011, a significant drop in global sea level occurred that was unprecedented in the altimeter era and concurrent with an exceptionally strong La Niña. This analysis examines multiple data sets in exploring the physical basis for the drop's exceptional intensity and persistence. Australia's hydrologic surface mass anomaly is shown to have been a dominant contributor to the 2011 global total, and associated precipitation anomalies were among the highest on record. The persistence of Australia's mass anomaly is attributed to the continent's unique surface hydrology, which includes expansive arheic and endorheic basins that impede runoff to ocean. Based on Australia's key role, attribution of sea level variability is addressed. The modulating influences of the Indian Ocean Dipole and Southern Annular Mode on La Niña teleconnections are found to be key drivers of anomalous precipitation in the continent's interior and the associated surface mass and sea level responses.
OSTS session
Science Results from Satellite Altimetry
Download to PDF