Monitoring Time-Space Variability of The Blob Using Microwave Satellite SSTs

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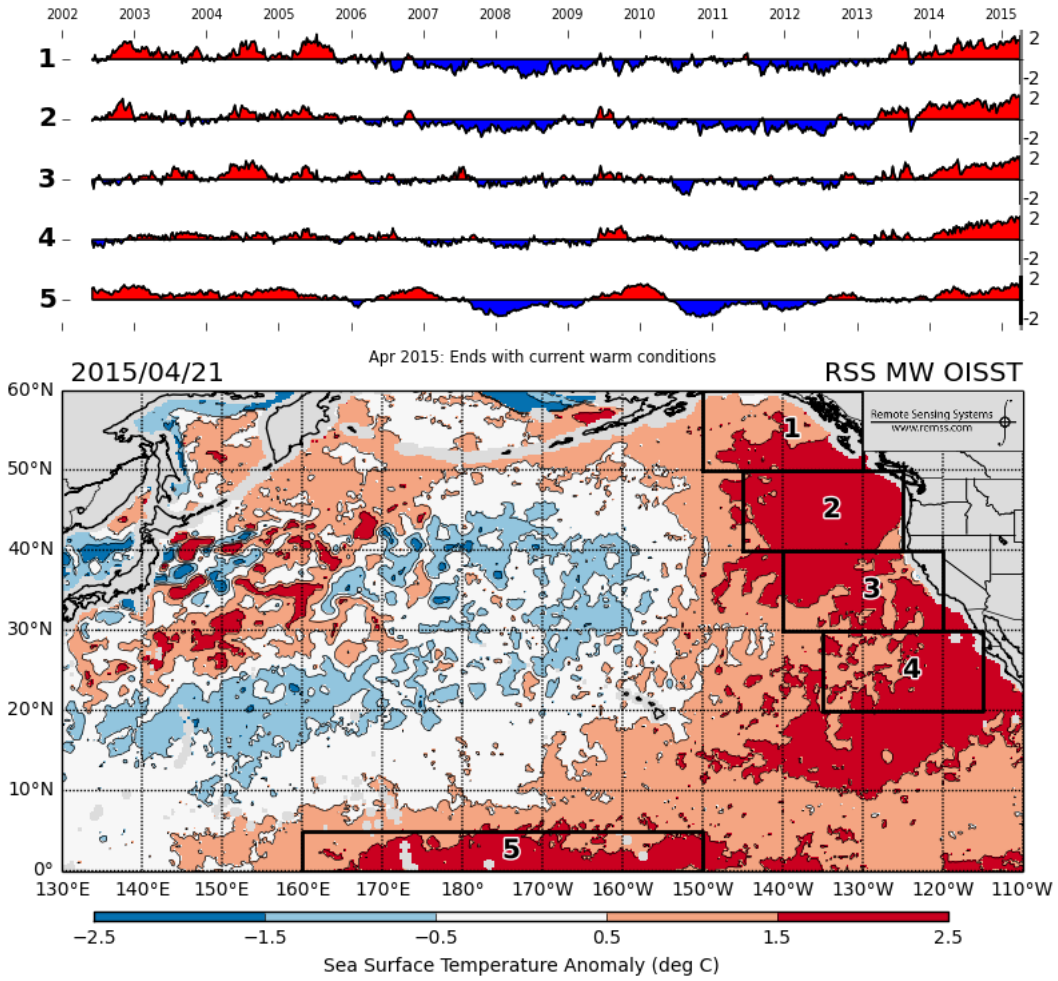
Satellite Monitoring of The Blob

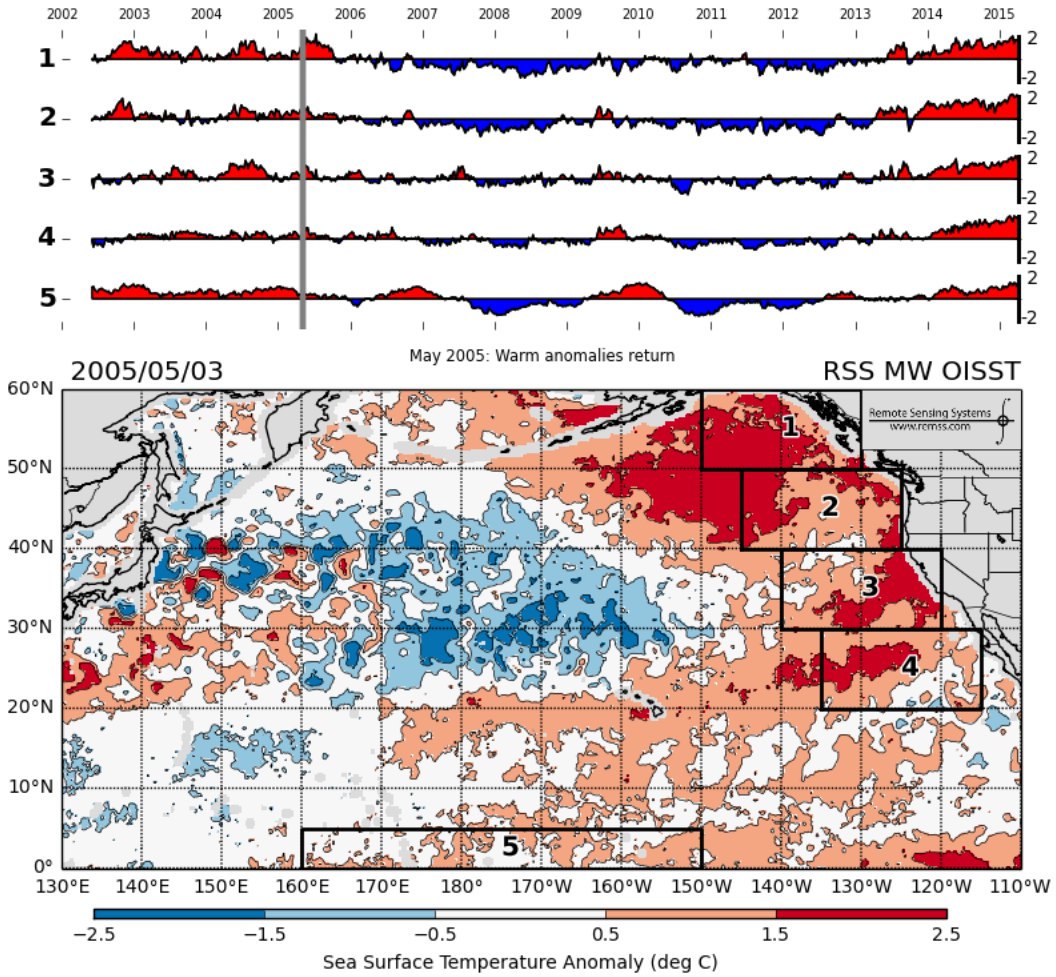
- Microwave satellite data provide Pacific-wide monitoring of SST
  - This begins in June 2002 with AMSR-E
  - Prior to that, TMI on TRMM provides tropical SST starting in December 1997
  - AMSR-E has C-band (6 GHz) channel for accurate cold water SST
  - AMSR-E ended in October 2011
  - WindSat provides SST since February 2003, but ending soon
  - AMSR2 providing SSTs since July 2012
  - GMI providing SST since February 2014, but only X-band (10 GHz)
- This provides time evolution of blob conditions
  - Movie 1, present event: January 2012 – April 2015
    - www.remss.com/papers/hilburn/Hilburn_NPac_SST_Anom_Jan2012_Apr2015.gif
  - Movie 2, previous event: June 2002 – December 2006
    - www.remss.com/papers/hilburn/Hilburn_NPac_SST_Anom_Jun2002_Dec2005.gif

Present Event



- The event was preceded by weak El Nino conditions in mid-2012
- Brief mild warm spell in late 2012
- Cool anomalies at start of 2013, turning warm in April 2013
- Brief relief from warm anomalies in October 2013
- Main warming event starts in late 2013
- At beginning, warm blob centered about 150W, 45N
- Return of El Nino conditions in early 2014
- By May 2014, the blob stretched along entire west coast
- As of late April 2015, warm anomalies have not abated

Previous Event



- El Nino conditions during duration of event
- Warm blob was mostly northern event during late 2002
- Cool anomalies displace blob in early 2003
- Warm anomalies in mid 2003 were weak
- More cold anomalies pushed towards coast in late 2003
- Strong warm anomalies along entire coastline mid 2004
- Cool anomalies in the south in late 2004
- Warm anomalies return mid 2005, but central coast cooler
- Mild anomalies in early 2006 turn cold by end of year

Conclusions

- Previous event lasted about three years and took another year before return to cool
- We are about two years into the present event
- Both events were associated with El Nino
- Previous event had stronger warming in the north and came in episodes
- Present event is unique with strong warming all along the coast and is more persistent
- Previous event had more influence from cool anomalies in North Pacific current