OCEAN ACIDIFICATION AND HYPOXIA PANEL REPORT

Presentation to the SCCWRP Commission

Stephen B. Weisberg
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OCEAN ACIDIFICATION AND HYPOXIA PANEL

- Acidification has gained considerable management attention
  - Focal point for the West Coast Governor’s Alliance on Ocean Health
  - One of two foci for the Pacific Coast Collaborative

- Expert Panel formed to summarize the state of the science and identify management options
  - 20 top scientists in the field have been working for two years
  - The Panel has developed nine documents that describe and support a series of findings and recommendations

- You asked for a briefing on those reports
  - Timing is a little awkward as the reports have not yet been released
  - But, I can still provide you the high points
EXECUTIVE SUMMARY

• **Six findings**
  – Summarizing our State of Knowledge

• **Eight recommendations**
  – What should you do about it?

• **Seventeen action items**
  – Translating the recommendations into things you can do now

• **Supported by eleven appendices**
  – Two-page tear-out fact sheets
FINDINGS

• OAH will have severe ecological and economic consequences for the West Coast

• Global carbon emissions are the root cause of OAH

• There are actions you can take to lessen exposure to OAH

• You can also enhance the ability of ecosystems to cope with OAH

• Accelerating OAH science will expand the number of management options available

• Inaction now will reduce options and impose higher costs later
WATER QUALITY TRENDS ARE APPARENT

CO$_2$ Time Series in the North Pacific Ocean

- Mauna Loa atmospheric CO$_2$ (ppmv)
- Aloha seawater pCO$_2$ (μatm)
- Aloha seawater pH

Year

CO$_2$

pH
Shell-forming abilities are the first to be affected
  - Larval forms most vulnerable

We are also seeing early effects on fish behavior

Most apparent change is in the oyster industry
  - Four hatcheries provide >90% of seed stock and three have suffered acidification-related failures
  - They now need to buffer their water for the larvae to grow
FINDINGS

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Roadmap of Local Management Options to Address Acidification and Hypoxia

- **Reduce Exposure**
  - Reduce nutrient and carbon inputs
  - Advance carbon removal strategies

- **Enhance Ability of Biota to Cope**
  - Reduce other stressors
  - Advance adaptive capacity

**Research**

**Monitoring**
ACTION ITEMS MOST RELEVANT TO SCCWRP MEMBER AGENCIES

• **Build models to evaluate where/when/if control of nutrient inputs makes sense**
  – The models will also address carbon removal strategies
  – SCCWRP is active in implementing this
  – Member agencies are also active participants in that modeling effort

• **Develop new acidification criteria**
  – pH is not the most relevant measure
  – The existing pH thresholds are not scientifically well-founded
  – The CA Assembly is out in front on this one with introduction of Assembly Bill 2139 (Williams) two weeks ago

• **Enhance monitoring efforts**
  – May affect what and how you make measurements
  – You are already leaders in the field with your evaluation of new pH sensors and deployment of continuous water quality moorings
TIMING

• Panel delivered the final reports yesterday
  – Those will be placed into a formatted document today

• The PCC will create an embargoed draft to brief the management and stakeholder community
  – Please ask Commissioner Phillips if you would like a more detailed briefing

• Planned public release of the documents is April 4