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## **Strong Wind theme report 2**

# Identified needs/problems

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- validation of sat. marine winds
- integration of all reporting wx stns into archive
- “coastal gap” problem needs to be addressed
  - sat. radar good only to 25 km, buoys out 150 nm+
  - what is NSF’s new initiative?
  - need initiative to link coastal winds to near coastal zone
- standardize wave height reporting
- verification of NWS gridded forecast
- some sat quality issues, eg precip contamination, but in general it is a good resource

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# Resources

- NWS gridded fields new climatology resource
- Various resources for HI – GFS, RSM, some MM5, WRF
- Terrestrial coastal stations – 14 currently archived in HI
- CPC storm track, intensity, wave, precip fields
  - CPC output already going out in GIS format
- TC passage data
- 6 hly blended seawinds (sat) quarter-degree grid (speed)
- CSC stakeholder report (on line)
- NWS survey also done – find this

# Ideas

- collect Pacific environmental forcing data/links at IDEA central server location
- coastal station wind climatology –
  - direct at wind-sensitive users that have choices about when they can conduct operations, eg paragliding
- correlate NNR data with harbor water levels
  - arrive at statistical climatology of atm situations that generate high harbor wl
  - would enable NWS to issue non-storm condition advisories
- run this with “conditional” climatologies, eg fit within the ENSO regime etc

# Many Uses of High Resolution Wind Data

- Wind generated energy
- Insurance
- Tourism – surfing and wind-surfing
- Sailing
- Shipping (in channels and ports/bays)
- Fishing
- Emergency Management
- Gliders, parasailers (rec&tourism)

# Ideas

-coastal station wind climatology –

- direct at wind-sensitive users that have choices about when they can conduct operations, eg paragliding

➤ Requirements (for now make some assumptions and press on; harvest some specifics from CSC/NWS user solicitation efforts that have already been done for some further direction in the near-term)

➤ users (must keep in mind allied science communities as “users”, eg recent wave comparison study pointing to sensitivity of wind accuracy)

➤ products

## > Datasets

- > NCDC ISH at each of 14 coastal sites in HI  
(can be run at all ISH sites in US affiliated states)
- > get the other stations to Asheville for future work(!)
- > Atkinson has downloaded this set
- > UH coastal buoys? (Merrifield)

## ➤ Analyses

- Basic probability exceedence from frequency binning
- GEV/lognormal fitting/L moments analysis (Chu)
- ENSO conditional (focus on moderate/strong El Nino signals – warm/cold)
  - use NOAA operational definition (SST derived)

## ➤ who will provide/perform

- Atkinson (students)

## ➤ timelines

- early fall (frequency product)
- spring 2007 (more sophisticated probability work)

## user integration

- Feed initial products into HI State Tourism Board (transportation – small craft; eg “HI small boaters association” )
  - ask an Agricultural association if this is of use for their constituents
  - approach HI electric company – power lines, wind energy
  - insurance?
- Work with Annette Hollingshead to tailor product development
- Other Pac regions – talk to met people to figure out tourism boards etc to speak to
- Feedback – ask State Tourism Board to gather reactions/feedback from individual operators
  - we can't chase down users at the individual level
  - capacity/expectancy for iteration
- State climate office –information baseline

# Ideas

## “Persistent wind” harbor surge events

### > Datasets

- > ISH: Identify applicable (try for US affiliated states)
- > NNR (ERA)
- > Atkinson has these sets (NNR at least)

### > Harbor water level records

- > Hilo, Kahului, Pago Pago
- > sources: Harbormaster, UH, UG, DOT, PEAC
- > Ken (Samoa), WFO Honolulu

### ➤ Analyses

- preliminary assessment of water level data set
  - ID high water level events, filter out storm-driven events
- Wind speed/water level correlation, conditional on direction
  - identify lead/lag temporal signatures that could be harnessed for NWS predictive capacity.

- who will provide/perform

- Atkinson (students)

- timelines

- spring 2007 (getting water level datasets might take a while)

### **user integration**

- Work with Annette Hollingshead to tailor product development

- Feed initial products to harbor masters, DOT, Civil Defense (eg road at Hilo gets overtopped during surge events)

- Other Pac regions – equivalent agencies

- Feedback – some sort of harbormasters association? ask to gather reactions/feedback from individual harbors

- NWS is a “user” for the prediction tools

## Ocean upwelling index for fisheries/marine ecosystem communities

- > compare model derived Ekman-pumping upwelling with what can be obtained now with blended ocean winds.
- > Already funded under PRIDE (Zhang)
  - needs better wind information in the “coastal gap” – 0 – 25km offshore zone

## Future research task

Storm track – CPC – for identification/correlation of events that hamper harbor activity at Samoa, eg cruise ships can't get in

- > climatology that would give tourism planners better ideas of the “windows” they can operate within

