SanDiego-Coasts in Context-paper.doc
Coasts in Context: linkages across inland and offshore

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Idea in a Nutshell
The CoPe program should expand "coast" to encompass offshore and inland environments.

Specific differentiated recommendation
Coastal margins are linked systems that can extend from the coastline 10s to 100s of kilometers inland and offshore and include far-field effects from atmospheric systems, sea level rise, resource and energy infrastructure and transport, and human migrations. ***Therefore, we recommend creating regional hubs that facilitate integrated systems research focusing on the linkages and feedbacks among ocean-atmosphere-terrestrial-human systems.***

CoPe hubs should focus not just on the environment and people immediately adjacent to the coastline, but effort should extend inland far enough to include entire watersheds, biomes, land uses, and transportation infrastructures, and extend offshore far enough to include atmosphere and ocean processes that affect the land. This will enable studies of feedbacks in complex, linked systems that affect coasts and will facilitate connecting patterns and processes across disciplines and spatial scales.

Hubs will be placed in particular geographies, and hub participants will work with vulnerable populations to identify and address important problems and research gaps. Hubs will also be placed in and study systems at risk…

Hubs will provide networking opportunities among community stakeholders and researcher and among researchers from different disciplines to develop and support these projects

-multiple stressors
-fat-tailed distribution of effort

Impact or value does it seek to deliver

- Facilitate connecting patterns & processes, methods & tools across disciplines and scales
- Motivate new remote sensing, modeling, & measuring techniques
- Enable studies of feedbacks and multiple stressors in the linked land-ocean-atmosphere-human system
- Communication with local stakeholders will reveal specific needs and new research avenues
- Find new solutions to connected coastal problems

-Facilitate collaboration across disciplines, including oceanography, marine ecology, forest ecology and management, soils science, hydrology and geomorphology, marine and terrestrial biogeochemistry, fishery sciences, atmospheric sciences, coastal geology, sociology, cultural anthropology, economics, education, agricultural science, and big data science.

research is better because of collaboration; collaboration will transform coastal research and produce integrated knowledge that is transferrable to other hubs and coastal communities; foster systems thinking; the sum of the integrated parts is greater than the whole
-researchers, agencies, and community stakeholders will benefit from integrative and collaborative research
-resource movements, people movements, both normal and catastrophic

Reasoning or supporting evidence behind idea
Our reasoning behind this proposal is threefold:

1. Coasts do not exist in a vacuum; they are connected to offshore and inland ecoregions. Therefore, the science of coastlines and people must be integrative.
2. We know that science is more societally relevant when a diversity of voices are involved from the beginning…. enable planning with broader perspective
3. Existing NSF programs create barriers to multidisciplinary and cross-systems research. For example, much current coastal margins research is stuck in a nether-world between the Biological and Geosciences Directorates.

there are similar efforts within NSF (eg. LTER) that could serve as a model
leverage with other agencies, NERRs, marine stations

Some research examples:
-atmospheric feedbacks
-ocean conditions impacts on fishery resources impacting resource dependent communities
-warming trends affecting seasonal hydrology impacting drinking water quality and sedimentation
-expanding human footprint along coast impacting water systems, energy, food, pollution
-evolving management policies and feedbacks with natural systems

Requires common data formats across disciplines

http://bit.ly/cope-sd

Downstream impacts of upstream events
Transportation networks (roads, rivers, barges)
Food and agriculture access by coastal cities
Migrations of people inland, inland development away from coasts to suburbs
Ocean temperature changes impacting inland weather patterns
Urban temperature effects on sea breeze