**Linkages among Stakeholder Decisions, Stakeholder Information Needs, & Science Needs**

**Introduction:**

The science priorities of the WALCC are determined, in part, by the linkages between the needs of our stakeholders (land and resource managers and decision makers) and the potential science activities. Understanding these linkages will help guide/bound the science discussions during the conceptual modeling sessions and help you better provide input to the LCC regarding priority science activities.

The following three tables illustrate these linkages with regards to the LCC’s Pilot Program on *Changes in Coastal Storms and their Impacts*.   
Table 1 summarizes (broad) types of stakeholder decisions affected by changes in coastal storms.  
Table 2 summarizes some key physical system processes and related stakeholder information needs that commonly arise.  
Table 3 illustrates the linkages between the Information Needs identified at the AOOS Coastal Hazards Workshop (May 2010) and the stakeholder information needs (from Table 2) that they would help address.

**Background on sources:**

The tables are constructed from two sources:   
- “Notes for AOOS Coastal Hazards Workshop, May 13, 2010”

- information gathered during the WALCC’s 2012 RFP project selection process. Each proposal submitted included the contact information and/or positions of three *decision makers* whom the PI thought would have direct use of the proposed project products. The LCC sent each proposal’s abstract to up to three decision makers and asked them to describe   
(i) any decisions they foresaw arising in the next 3-5 years that, based on the abstract, the results of the proposed project would be of direct use of in decision making; and   
(ii) any known but unmet information needs they had, and decisions they foresaw, related to (changes in coastal processes / storms and their impacts)[check exact phrasing of query]. The replies were then compiled and summarized.

Table 1. Example stakeholder decisions and planning activities identified by the decision makers queried during the WALCC 2012 project selection process. Decisions have been collated into five broad groups (in bold).

|  |  |
| --- | --- |
| **Key** | **Community Planning; Coastal Infrastructure** |
| C1 | Update Borough Comprehensive Plans |
| C2 | Update Village Comprehensive Plans  (including community relocation plans; assess public infrastructure for stabilization and/or relocation [roads, landfill, etc.]; define zones for community development; define zones qualifying for higher rates of national flood insurance; etc.) |
| C3 | Coastal Infrastructure design, assessment, siting (e.g., northern port) & project planning (including designing erosion prevention structures; assessing performance of coastal storm damage reduction projects; determining recommended soils composition types to support infrastructure; identifying material resource locations; determining sustainable dredging techniques; etc.) |
| C4 | Determine barge access routes |
| C5 | Cultural resource planning and mapping |
|  | **Land Management** |
| L1 | Long term planning for Federal conservation unit land management (Refuges, Parks, etc.) |
| L2 | Revising unit logistics and safety planning in light of likely climate change impacts |
| L3 | Access to subsistence resources |
| L4 | Management of federally designated critical habitat |
|  | **Species Management** |
| S1 | Subsistence species management |
| S2 | Other species management (commercial, recreational) |
| S3 | Species Recovery planning |
| S4 | Threats analysis in listing decisions |
|  | **Industry Oversight** |
| I1 | Environmental Assessments (NEPA) |
| I2 | permitting decisions related to development proposals |
|  | **Emergency Warning / Response** |
| E1 | Oil spill planning and response by federal and state agencies and organizations (includes Identify emergency response locations) |
| E2 | Warning system to prompt community response to potential extreme weather events, storm surges, and erosion events (especially for communities w/ limited evacuation routes) |

Table 2. Information needs identified by stakeholders queried by the WALCC (e.g., information they would want in order to frame a recommendation or strategy to a decision maker with regard to the stakeholder decisions listed). These have been collated by underlying physical system component or process. Relevant decisions or planning activities are listed in parentheses in the first column.

| **System Component or Process** | **Stakeholder Information Needs** | **Key** |
| --- | --- | --- |
| Coastal Flooding: operational now-casting (E2) | Identify Resources at risk | SN1 |
|  | Prioritize Areas at risk | SN2 |
|  | Assess mitigation strategies | SN3 |
| Coastal Flooding: hind-cast, forecast  (incl. inundation, deposition, salinization, etc.)  (C1, C2, C3, C6, L1, L3, S1, S2, E1) | Assess Changes in Historic frequency, magnitude, extent | SN4 |
|  | Project future frequency, magnitude, extent | SN5 |
|  | Identify Resources at risk | SN6 |
|  | Prioritize Areas at risk[[1]](#footnote-1) | SN7 |
|  | Assess mitigation strategies | SN8 |
| Coastal Erosion: operational now-casting(E2) | Identify Resources at risk | SN9 |
|  | Prioritize Areas at risk | SN10 |
|  | Assess mitigation strategies | SN11 |
| Coastal Erosion: hind-cast, forecast (C1, C2, C3, C4, C5, L1, L2, L3, S1, S2, I1, I2, E1) | Assess Changes in Historic frequency, magnitude, extent | SN12 |
|  | Project future frequency, magnitude, extent | SN13 |
|  | Identify Resources at risk | SN14 |
|  | Prioritize Areas at risk | SN15 |
|  | Assess mitigation strategies | SN16 |
| Sea Level Rise & coastal subsidence (C1, C2, C3, C5, L1, L2, L3, S1, S2, I1, I2) | Account for in prioritizing Areas & Resources at risk of flooding, erosion, etc. | SN 17 |

Table 3. ‘Information needs’ identified by the AOOS Coastal Hazards Workshop (May 2010) and the ‘Stakeholder Information needs’ identified by WALCC that would utilize these results/products if they were available.

| **Coastal Hazard Topic** | **AOOS  ‘Information Need’** | **WALCC ‘Stakeholder Need’** |
| --- | --- | --- |
| **Storm Forecasting** | Higher resolution ocean model coupled w/ atmospheric processes to reduce subjective interpretation | SN1-2, SN4-7, SN9-10, SN12-15 |
|  | Improved information on: tides, water level, winds before & during storm events | SN1-2, SN5-7, SN9-10, SN13-15 |
|  | Web cams & state of sea walls |  |
|  | Wave/swell & wind observations upstream | SN1-2, SN5-7, SN9-10, SN13-15 |
|  | Improved bathymetry for model predictions | SN1-2, SN5-7, SN9-10, SN13-15 |
|  | Improved coastal DEM for better inundation & flooding predictions[[2]](#footnote-2) | SN1-2, SN5-7, SN9-10, SN13-15 |
| **Sea Ice** | Observational platform for tracking ice and thickness through clouds (when MODIS is unavailable) |  |
|  | Info on wave/sea ice interaction and local sheltering effects | SN1-3, SN5-7, SN9-10, SN13-15 |
|  | Improved sea ice thickness and concentration information |  |
| **Digital Coast** | Address gap between bathymetry and topography[[3]](#footnote-3) | SN1-2, SN5-7, SN9-10, SN13-15 |
|  | Precise beach elevation measurements (vertical control) | SN1-2, SN5-7, SN9-10, SN13-15, SN17 |
| **Erosion & Shoreline Change** | Network of monitoring buoys to better understand interaction between land and sea | SN9-11, SN13-16 |
|  | Onshore and offshore boreholes to measure and monitor permafrost |  |
|  | LIDAR data along coast (for DEM, etc.) | SN1-2, SN5-7, SN9-10, SN13-15 |
| **Shoreline Observations** | Beach characteristics, waves, wind[[4]](#footnote-4) | SN1-2, SN5-7, SN9-10, SN13-15 |
| **Data Access** | ID existing databases and make discoverable |  |

1. Also on AOOS’ Coastal Hazards Workshop Needs list (May 2010) as ‘inundation maps for communities in western and northern Alaska’ and ‘…for priority resource habitats (e.g., YK Delta, etc.)’. [↑](#footnote-ref-1)
2. Added by WALCC, redundant with items listed in Digital Coast. [↑](#footnote-ref-2)
3. Temporary tide stations to stitch together? (prioritize locations, sequence) [↑](#footnote-ref-3)
4. Expand Alaska Harbor Observing Network (# sites sending automated digital information, community networks of recorded human observations). [↑](#footnote-ref-4)