What can we do with SWOT data?

What are the policy implications that these data would have for water management?

Daniel P. Loucks
Cornell University
SWOT and Water Management

Water Management:

- Keeping everyone happy
- With better data (forecasts) we can manage water better.
- Will we? Mainly a social science issue.
Possible Management Applications?

- DEM-based automated extraction of river basin and network geographical / topographical data
- Improved input and parameter data for distributed rainfall-runoff modeling
- Source of hydrologic data for missing or gaps in records. – for planning and management
- Predictions of future flows, elevations, volumes
- Improved real-time management (more effective joint reservoir operation, transboundary ops.)
- Flood wave prediction in large basins, coastal areas
- Other?
Depends on time and space scales
Watershed / River Basin Delineation

Hydrogeomorphic properties (e.g. flow direction, upslope area, stream network, wetness index, hypsographic curves, width-function) for better rainfall-runoff modeling.
Managing water stages over large areas
‘Real time’ water management:

Everglades, Florida
Joint multi-reservoir operation
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Joint Multi-reservoir operation
Predictions of snow pack and future flows / stages
Predictions of snow pack and future flows / stages

Sea Ice in Retreat
This summer saw a record-breaking loss of Arctic sea ice. Experts attribute the changes to the interaction of wind, weather, ice drift, ocean currents and greenhouse gases.

SUMMER SEA ICE EXTENT*
- 1979-2005 average
- 2005 - 3
- 2007 - 1

*Sea ice extent is the area of ocean covered by at least 15 percent ice.

PERENNIAL SEA ICE
Ocean within this boundary had been covered with ice year-round since satellite records began in 1979. This summer was the first time that part of the perennial sea ice was open water.
Predictions of snow pack and future flows / stages

Avalanche Control
Future reservoir inflows
Prediction of stages/flows in rivers

Mosel River, Germany
Hazard predictions; detection of leaks, levee breaks, flooding
Predicting flood stages in rivers and coastal areas
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Rhine River, Germany, NL
Issues:

• Temporal and spatial resolution
• Ground truth – calibration, precision, quality assurance and control?
• Data management, processing and timely communication
• Institutions. Regulations. Laws.

Policy implications – increased liability?
Need for a data integration framework to meet standards and requirements