



# **RC&D, Partnerships, NASA Project, Partnerships**

**Water Stewardship Council  
October 8, 2009**



**What is RC&D?**

# What is RC&D?



## Federal Program

Food & Agriculture Act of 1962

Designation of RC&D area

RC&D Coordinator provided

**Local Group of Sponsors form a Council and apply for authorization**

- County governments
- City governments
- Tribes
- Conservation Districts
- School Districts
- Ports
- Other non-profits, civic organizations, individuals

**501(c)(3) non-profit**

# What is RC&D?



RC&D Coordinator



**LOCALLY BASED**

**501(c)(3) non-profit**

**“The Council”**

## **Technical Assistance**

Identify Problems in Area

Establish Goals and Objectives

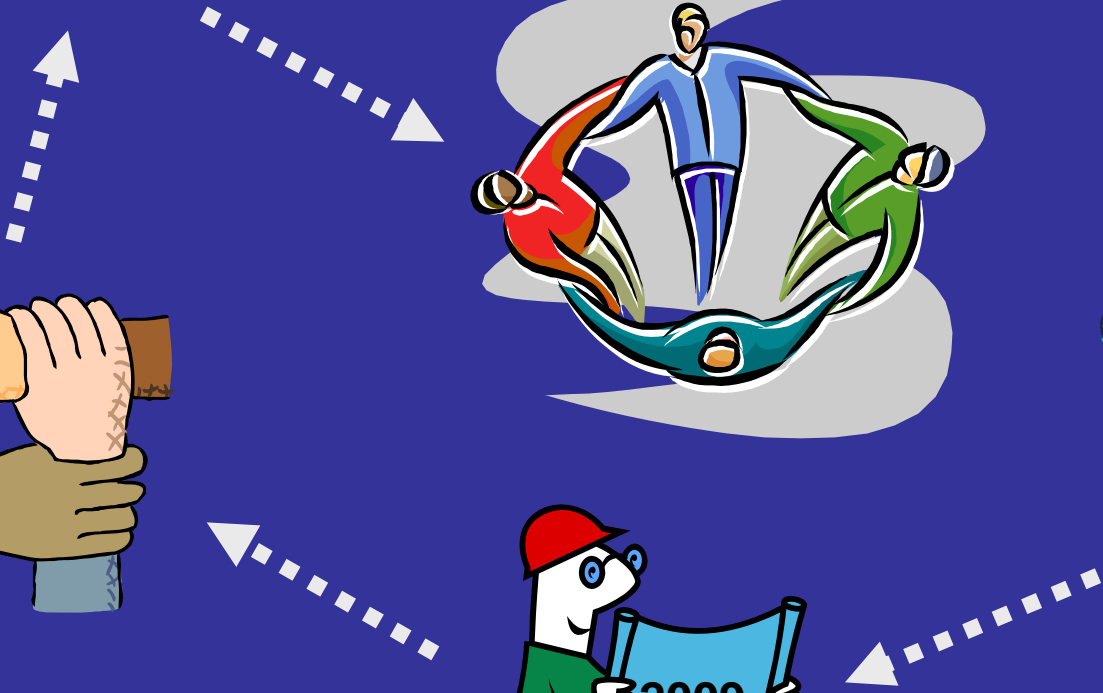
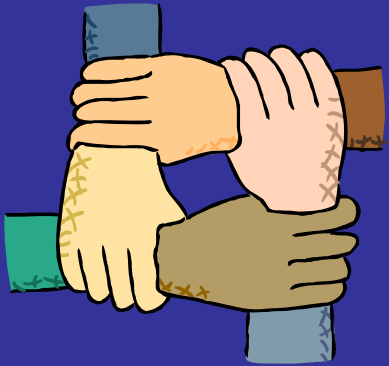
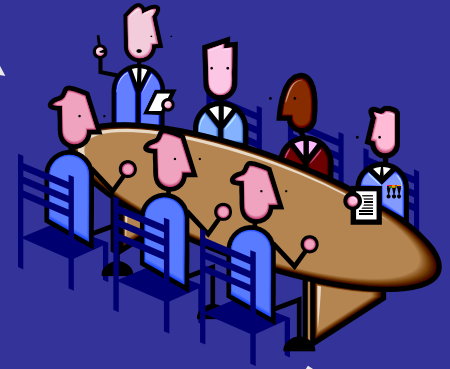
Develop Strategies

Project scoping

Find and apply for funding

Facilitate groups

Implement Projects



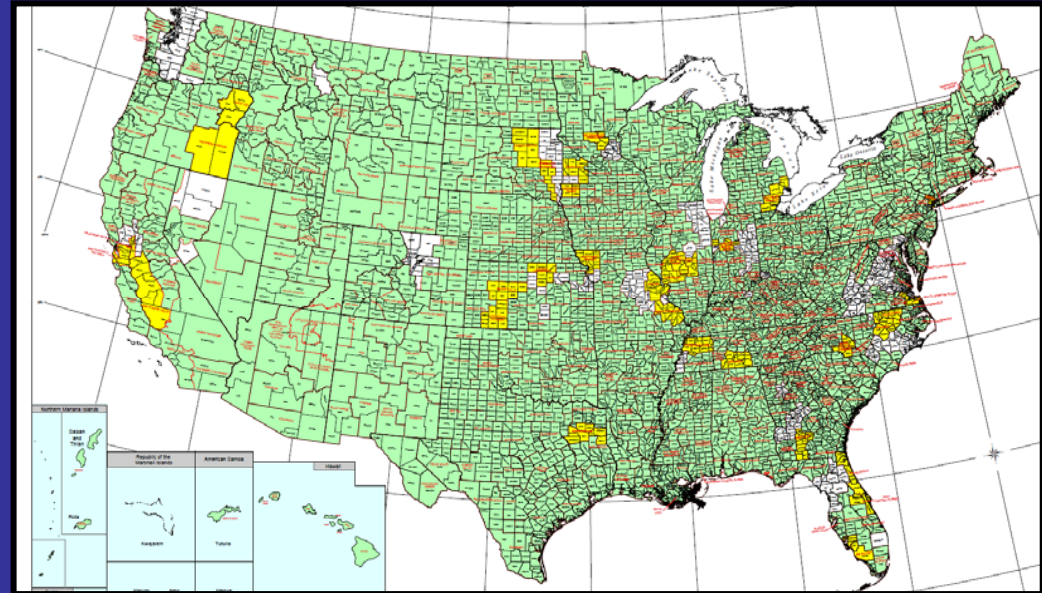
# Its a Local Thing

Not government entities

Eligible for diverse  
funding sources

Local, state, and federal  
government programs do  
not limit them

Each RC&D council can  
develop projects unique to  
their area



**Local people, making  
local decisions on  
local issues**



# North Central Washington RC&D

3 Counties: Chelan, Douglas and Okanogan

## 5 Major Focus Areas:

- Water Resource Management
- Land Resource Management and Conservation
- Community Development
- Rural Economic Development
- Education and Outreach

Summarizes to 3 legs of a stool: *Natural resource conservation*, *community health* and *economic viability*.

# What we work on...

Invasive Species Control

Education and Outreach

Convene Stakeholders

Tourism, Trade and  
Transportation

Biomass Utilization and Fuels  
Reduction

Food Networks





# Our Committees

## 1. Chumstick Wildfire Stewardship Coalition:

- Landowner-focused Field Day
- Healthy forests; monitoring and biomass utilization
- Partnership with the U.S. Forest Service

## 2. Initiative for Rural Innovation and Stewardship (IRIS):

- Biodiversity Council State Strategy and Pilot
- Sharing Successes Summit; Sharing our Voice
- Regional food systems



# Committees

## 3. VIA 97:

- Trade, Tourism and Transportation

## 4. Okanogan Trails Scenic Byway:

- Byway promotion through maps and website

## 5. NASA Tools and Technology





RC&D: making things happen!







# NASA Project

# North Olympic Peninsula NASA Solutions Network

## Project Details:

Fall 2006- Fall 2009

\$1.6 million from NASA

## Project Goal:

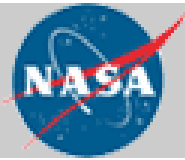
Bring NASA tools and technologies to local natural resource managers

## Initial Focus:

Dungeness and Elwha watersheds of the North Olympic Peninsula



# Project Partners



National Aeronautics  
and Space Administration

NORTH OLYMPIC PENINSULA  
RESOURCE CONSERVATION & DEVELOPMENT

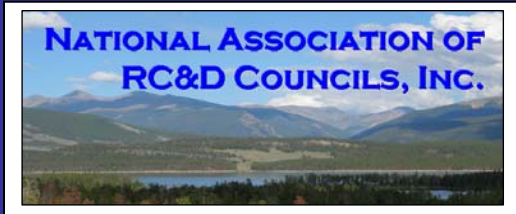
**NOP RC&D**

Pacific Northwest  
National Laboratory

Operated by Battelle for the  
U.S. Department of Energy



NATIONAL ASSOCIATION OF  
RC&D COUNCILS, INC.



**INL** Idaho National Laboratory



Clallam County, Washington



PENINSULA COLLEGE

National Park Service  
U.S. Department of the Interior

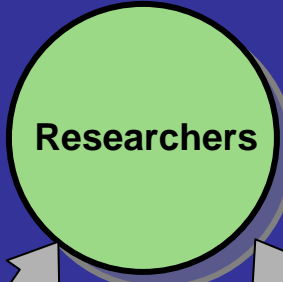


Olympic

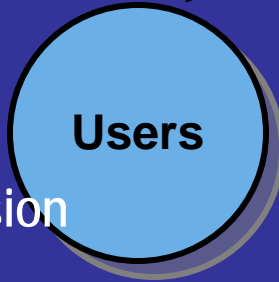
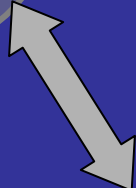
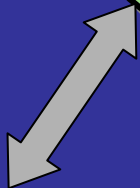
National Park  
Washington



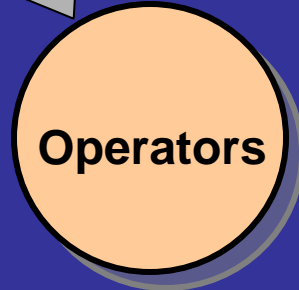
# Project Conceptual Model



Create decision support tools and systems

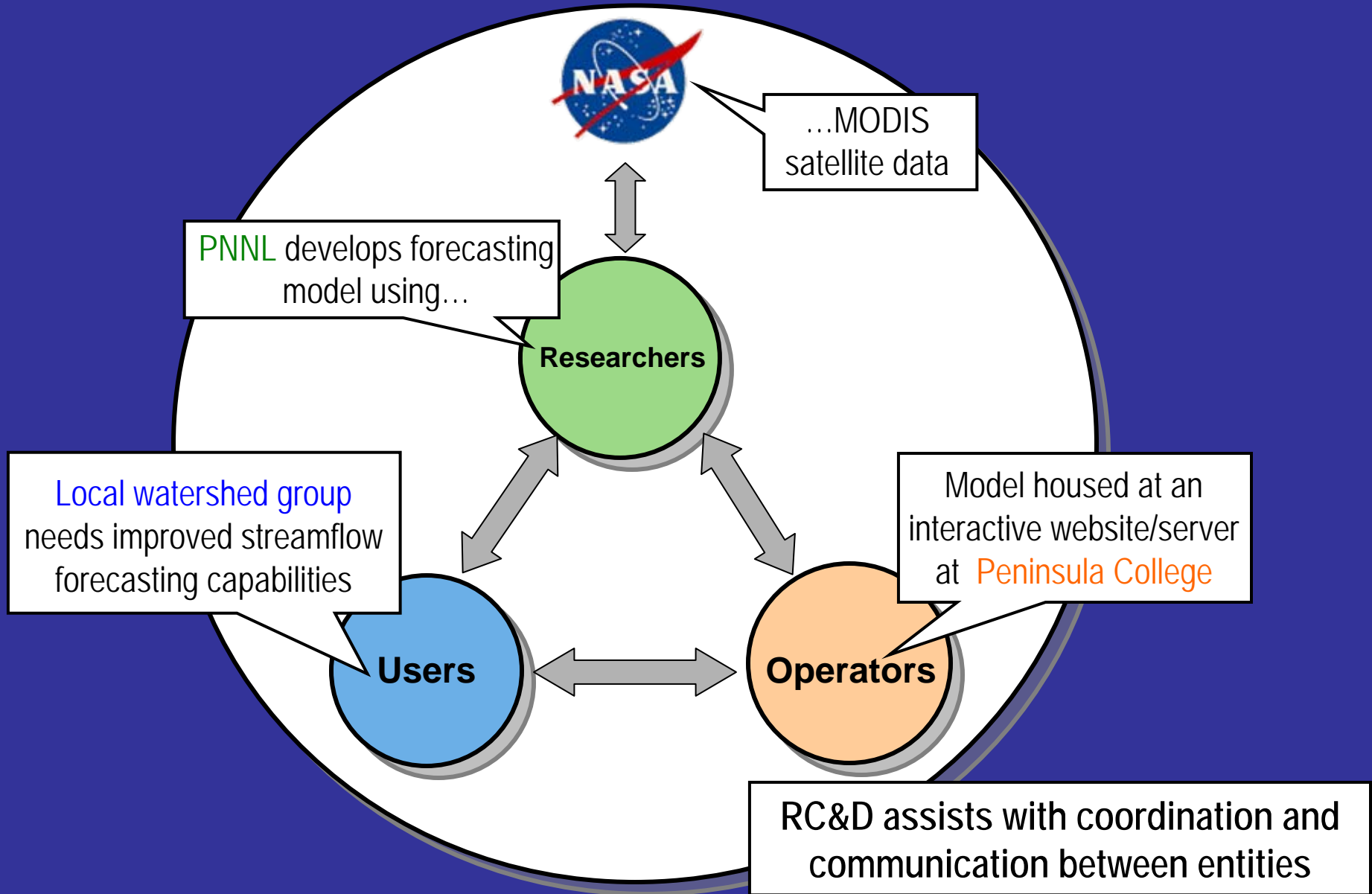


Need tools for planning and decision support



Make the research products available

# Project Conceptual Model



# Project Team Roles and Responsibilities

Member	Researcher	Operator	User
NOP RC&D			✓
USDA NRCS	✓	✓	✓
Pacific Northwest National Lab (PNNL)	✓		
Idaho National Lab (INL)	✓		
Peninsula College (PC)	✓	✓	
Olympic National Park (ONP)	✓		✓
Dungeness River Mgmt. Team (DRMT)			✓
Elwha Research Consortia	✓		✓
National Assn. RC&D		✓	✓

# In the Pacific Northwest, It's Water



Snowpack: Expected increases of 2-3°C would decrease snowpack 50-70% by ~2050.

Rivers: Snowmelt that feeds the Columbia River is diminishing: 60% reduction in the last few decades.

Aquifers: Odessa aquifer, supporting Columbia Basin agriculture, is dropping 10 ft/year.

# Year 1 Proof of Concept: Predicting Flow Patterns for the Dungeness River

## Snow Pack and River Flow

60 to 90% of streamflow in the western US originates from mountain snowpack.

Snowpack acts as a natural storage reservoir.

This water source is extremely sensitive to climate variability and change, and influences both ecological and economic sustainability.

**There is a need for new tools and technologies that can provide accurate streamflow predictions to assist resource planners**



# Existing Decision-Support Tool

NWCC - Streamflow Forecast Probability Chart


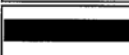

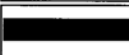
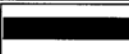
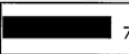
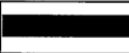

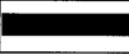
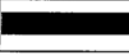


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## January, 2005 Streamflow Forecast Probability Chart for Washington

### OLYMPIC PENINSULA RIVER BASINS Percent Exceedance Forecasting Charts

DATA CURRENT AS OF: 1/07/05 13:53:55

<b>DUNGENESS near Sequim</b> APR-SEP Average = 152.0	90% Exceedance	 78%
	70% Exceedance	 94%
	50% Exceedance	 105% ( 160.00)
	30% Exceedance	 116%
	10% Exceedance	 132%
<b>DUNGENESS near Sequim</b> APR-JUL Average = 124.0	90% Exceedance	 73%
	70% Exceedance	 89%
	50% Exceedance	 100% ( 124.00)
	30% Exceedance	 111%
	10% Exceedance	 127%

NRCS-NWCC issues streamflow forecasts monthly for expected future flows.

Statistically-based predictions use the relationship between historical flows and measurements of precipitation, snowpack, and streamflow from limited locations.

In most cases, the approach cannot provide daily, weekly, or monthly flow predictions.

The approach also cannot be used to evaluate the impacts of climate change.



# Approach: Model and Data Fusion

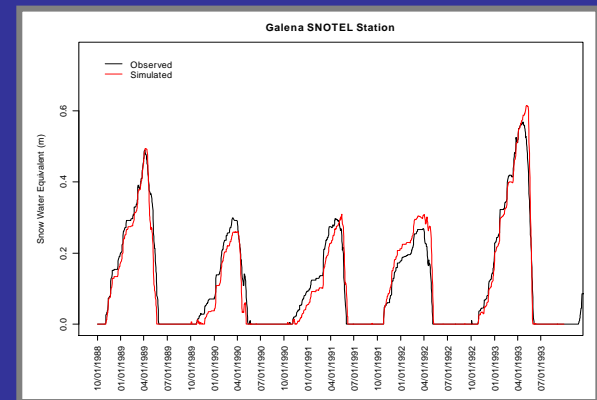
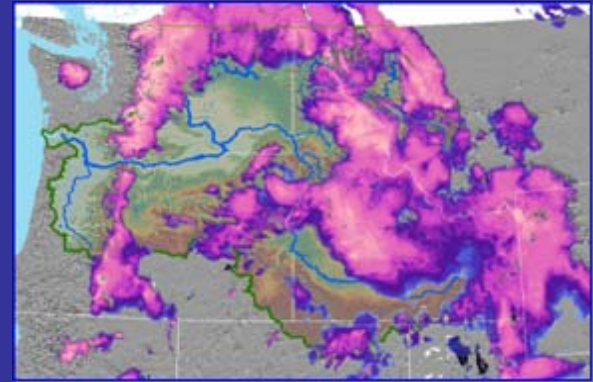
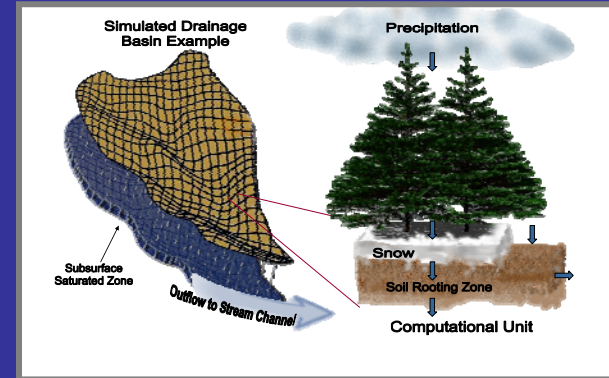
Combine a watershed hydrological model

with

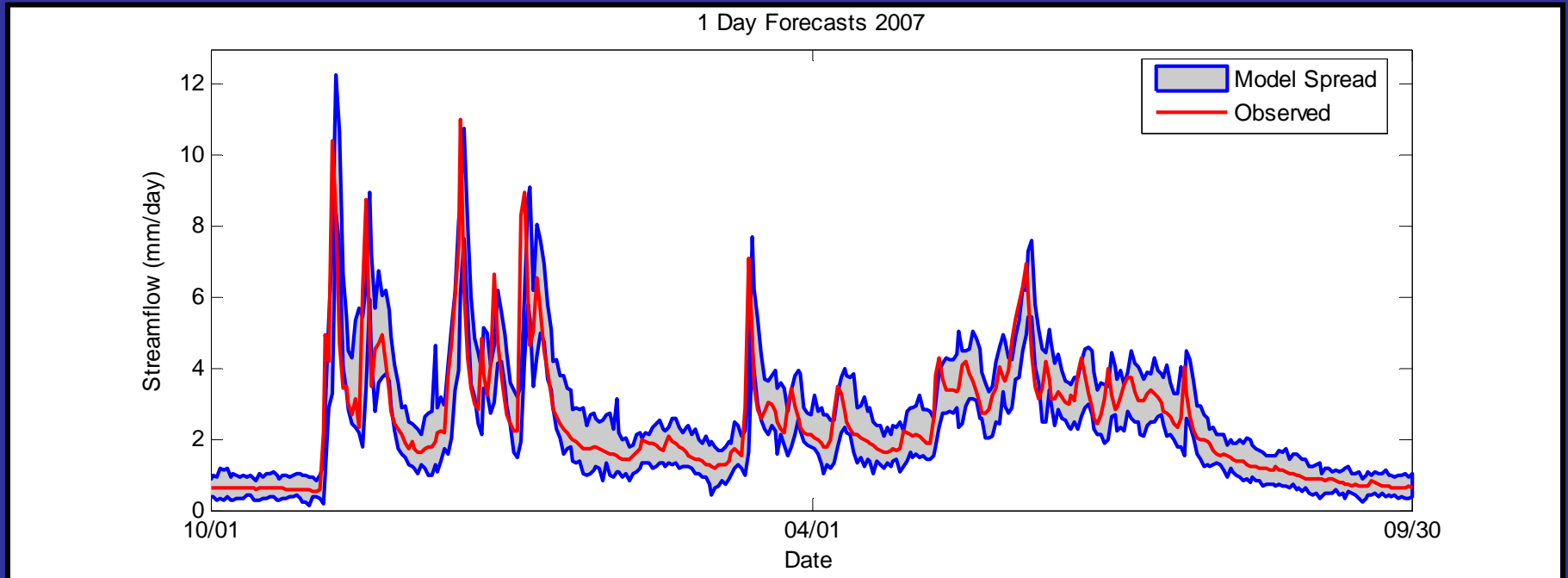
Near real-time remotely sensed spatial data from satellites

and add

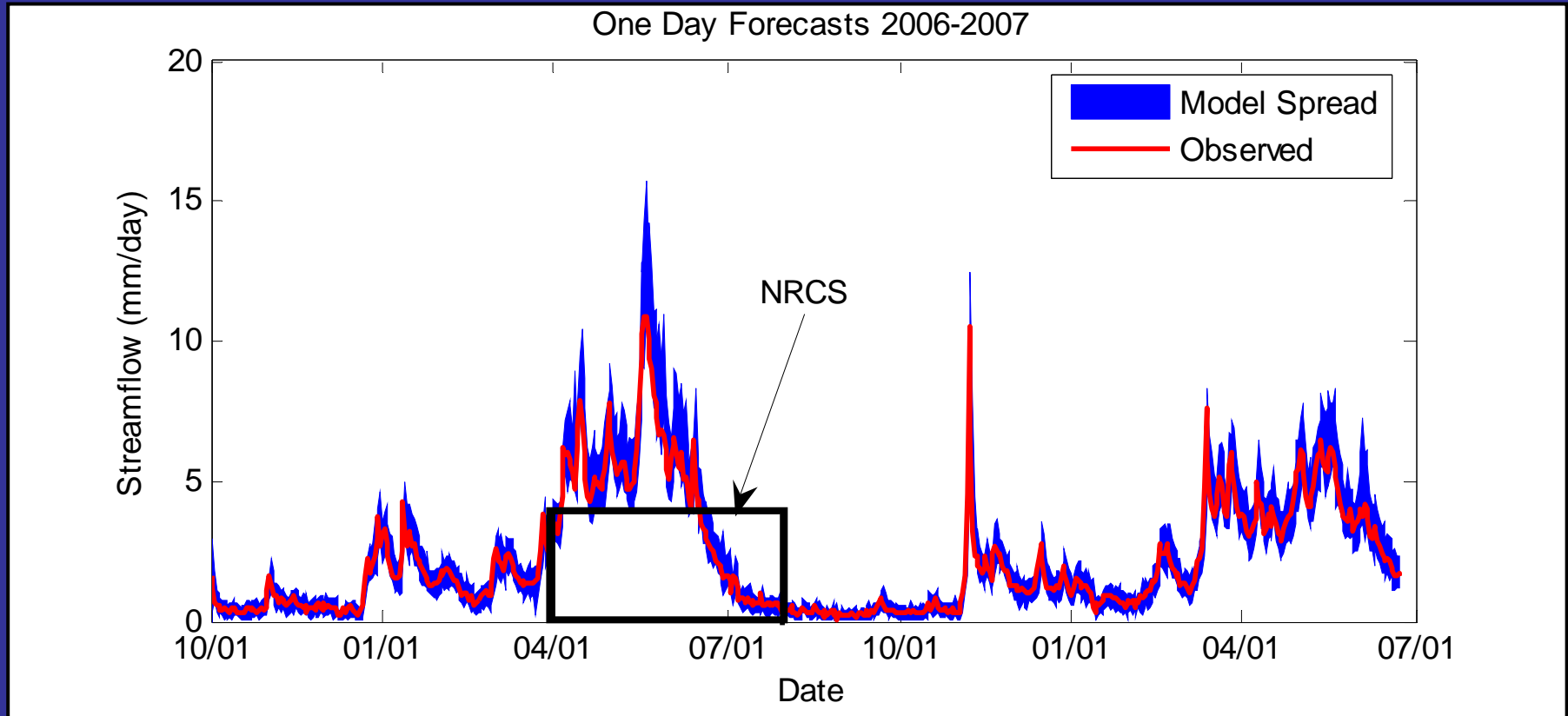
Real-time assimilation of temporal streamflow data



# A new decision support tool for watershed managers

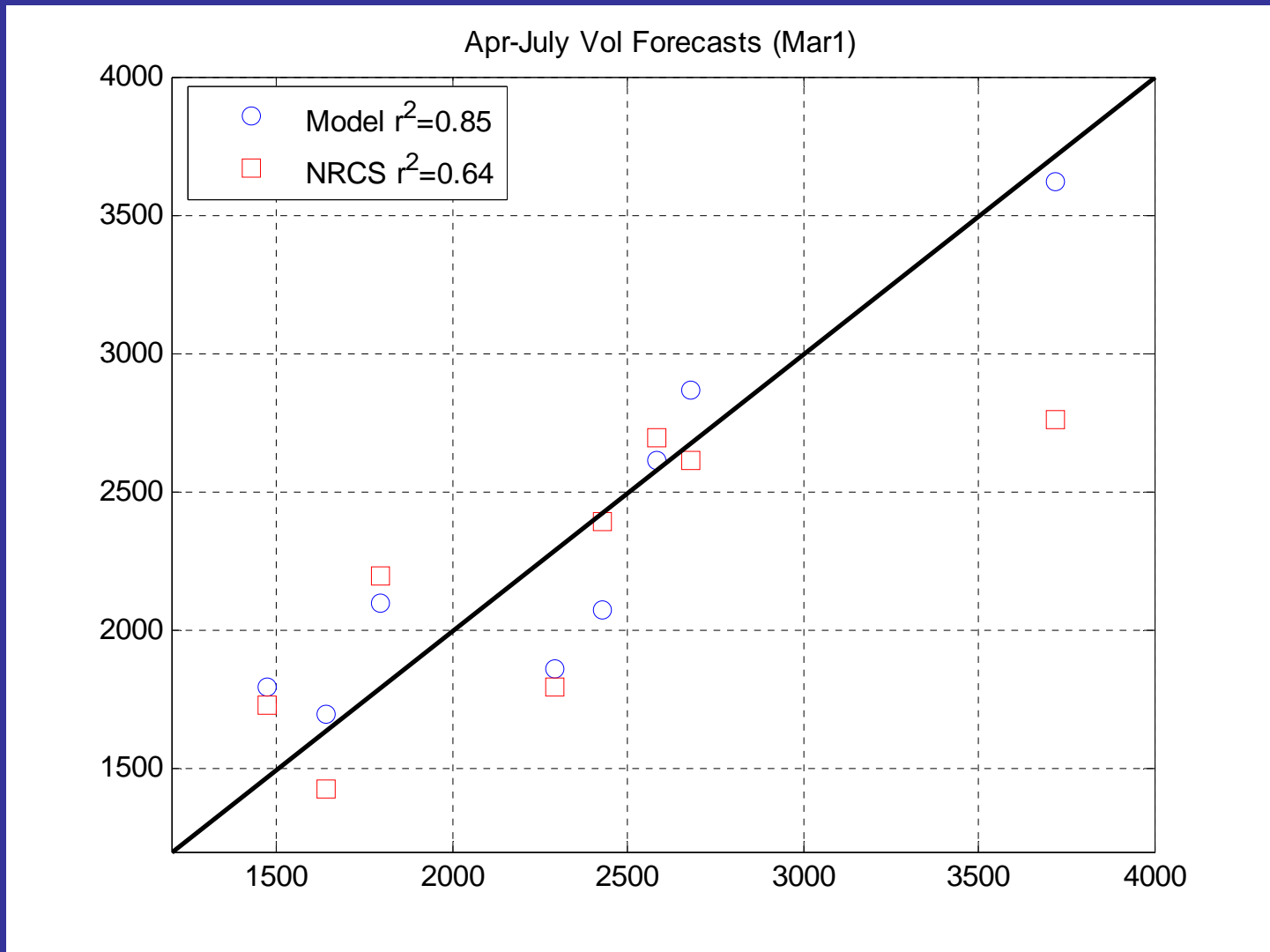


# New vs. Existing Decision Support Tools



The area inside the box provides the total amount of water expected to be available for a specific time frame.  
It does not provide detail flow estimates

# Seasonal Forecasts



# Hybrid Model R&R's

Organization	Role
<b>NOP RC&amp;D</b>	<b>Coordination and outreach</b>
<b>USDA NRCS</b>	<b>Technical support and guidance</b>
<b>Pacific Northwest National Lab (PNNL)</b>	<b>Hybrid model development and digital elevation mapping</b>
<b>Idaho National Lab (INL)</b>	<b>MODIS snowpack data processing, technical support</b>
<b>Peninsula College (PC)</b>	<b>Field collections, weather station installation, user web site development</b>
<b>Olympic National Park (ONP)</b>	<b>Technical support, SNOTEL permitting and installation</b>
<b>Dungeness River Management Team (DRMT)</b>	<b>Model and website specification input</b>
<b>Elwha Research Consortia</b>	<b>Results dissemination</b>
<b>National Assn. RC&amp;D</b>	<b>Results dissemination</b>

# Timetable and Major Activities

## Year 1 (2007)

### **How can NASA tools be used in the Dungeness Watershed?**

- Establishment of Solutions Network
- Dungeness Watershed project (Streamflow Hybrid Model)

## Year 2 (2008)

### **How can NASA tools be used in the Elwha Watershed?**

- Focus moved to resource issues in the Elwha watershed

## Year 3 (2009)

### **How can you build an effective Solutions Network in your RC&D Area?**

- Expansion of the concept nationally to 4 RC&Ds



# August 20th Workshop

## During Workshop:

1. List RC&D issues, challenges and needs
2. Discuss how decisions are currently made
3. Discuss what tools are used to support decisions, and existing information gaps
4. Explore whether NASA S&T could provide benefit
5. Provide guidance concerning team building

## After Workshop:

1. RC&D discusses and prioritizes
2. Creation of project conceptual work plan
3. Collaboration and teambuilding with NOPSN



# **Our Binational NASA Project**

# Where we are right now

- We know we want to use NASA science and technology
- Have identified project partners and support
- Of a large list of resource issues we could address, **water** generated the most discussion
- We need to define the scope of our project

*What, How and Who?*

# Narrowing the Scope

## What we need to consider:

- What do we want out of this project?
  - Goals, objectives and approach
- Project partners and teams
  - Need to keep in mind the Network we'd need in place to support our project. These elements will naturally fall out as we define our project
- Deliverables and applications

# Next Steps

1. October 14th: Scoping Meeting in Chelan, WA
2. Create a Charter and Briefing paper
3. Develop the Project Team and Workgroups

# Your Turn

- You get the first crack at narrowing the scope and deciding the course for how we want to use NASA S&T
- Initial reactions?
- Would like to open it up to you...
  - What are your ideas?
  - What should our project look like?
- How can what you know and what you've developed help this effort?
  - The Okanagan Basin Hydrologic Model
  - Technical Committee
  - Local government tools
  - IJC involvement



# Contact Info

- North Central Washington RC&D
  - Samantha Bartling: (509) 422-2750 x 107; [samantha.bartling@wa.usda.gov](mailto:samantha.bartling@wa.usda.gov)
  - [www.ncwrcd.org](http://www.ncwrcd.org)
- North Olympic Peninsula RC&D
  - Clea Rome: (360)452-8994 x 105; [clea.rome@wa.usda.gov](mailto:clea.rome@wa.usda.gov)

*It's going to be a great project and I look forward to working with you!*