

FY 2009 RESEARCH PROBLEM STATEMENT

Use this form to submit a problem statement

Submittal via E-mail is preferred: Save the form and give it a new, descriptive name, then send to:
barnie.p.jones@odot.state.or.us

ODOT Research Unit
200 Hawthorne Ave. SE, Suite B-240
Salem, OR 97301-5192

Office Phone: (503) 986-2700
FAX Phone: (503) 986-2844

TITLE

Investigation of design changes in Willamette Valley based on flow characteristics adjustments from climate change scenarios

PROBLEM (Description of need)

There are hundreds of ODOT road crossings in the Willamette Valley. Responsible crossing design requires knowledge and determination of design streamflows. Streams in Willamette Valley may be influenced by climate change. Annual streamflow peaks result from spring snowmelt and late summer storms, and as the distribution and timing of these events change, the timing, magnitude, frequency, and character of flooding will change as well.

PROPOSED RESEARCH, DEVELOPMENT OR TECHNOLOGY TRANSFER ACTIVITY

Using a representative amount of watersheds in Willamette Valley, use existing downscaled Global Climate Models (GCM) with 100 years of daily air temperature and precipitation. Use existing regional water-balance model (Basin Characterization Model, BCM) to calculate recharge and runoff in Oregon using downscaled GCM results. Simultaneously, apply a simple +3 °C increase to minimum and maximum temperatures to existing surface-water models (i.e. Precipitation-Runoff Modeling System) to evaluate affects of climate change on water availability and changes in water balance in forested watersheds. Evaluate climate change flood characteristics related to road crossing design specifications.

BENEFITS

Responsible and economical road crossing design can only proceed with knowledge of flood peaks. Quantifying the timing, distribution and characteristics (snowmelt vs. rainfall) of flood peaks due to climate change will be asessed with global climate change models. Potenatial links thorough PSU and OTREC will be reviewed.

CONTACT PERSON:

Name, address phone number and e-mail

Glen Hess, USGS
2130 SW 5th Ave
Portland OR 97201
503-251-3236
gwhess@usgs.gov

FOR RESEARCH UNIT USE ONLY

NCHRP
SPR
POOLED FUND
STATE
OTHER

PLEASE RENAME THE COMPLETED FORM WITH A SHORT NAME RELATING TO THE RESEARCH TOPIC.

Submittal of this form via E-mail is preferred. Send to: barnie.p.jones@odot.state.or.us