The JISAO - Climate Impacts Group

http://cses.washington.edu/cig/

• Goal: help the Pacific Northwest become more resilient to climate variations and climate change

• Supported by NOAA Climate Program Office as part of the Regional Integrated Science and Assessments (RISA) program 1995-2011
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://drought.unl.edu/dm

Released Thursday, October 1, 2009
Author: David Miskus, JAWF/CPC/NOAA
Accumulated Precip for the past year

Accumulated Observed: thick line
Accumulated Normal: thin line

Daily Observed
Period Total: 41.4 inches: 1050.9 mm
Surplus: 5.1 inches: 129.2 mm

Data updated through 18 OCT 2010

Source:
http://www.cpc.ncep.noaa.gov/products/global_monitoring/precipitation/northwest_1yrprec.shtml
Accumulated Precip for the past year

Precipitation
SEATTLE—TACOMA, WASHINGTON

Accumulated Observed: thick line
Accumulated Normal: thin line

Daily Observed
Period Total: 42.7 inches: 1084.2 mm
Surplus: 6.5 inches: 164.2 mm

Data updated through 18 OCT 2010

CLIMATE PREDICTION CENTER/NCEP

Source:
http://www.cpc.ncep.noaa.gov/products/global_monitoring/precipitation/northwest_1yrprec.shtml
Daily Temperatures

PORTLAND, OREGON

Daily Average and Normal Temperatures

31-Day Running Mean of Daily Temperature Departures

Green Line depicts mean departure for the period: +0.28°C

Daily Maximum (red) and Minimum (blue) Temperatures

Data updated through 18 OCT 2010

http://www.cpc.ncep.noaa.gov/products/global_monitoring/temperature/northwest_1yrtemp.shtml
A mediocre to poor snow year for the Cascades bolstered by a cool and wet spring

ALPINE MEADOWS SNOTEL as of 10/19/2010

*** Provisional Data, Subject to Change ***

Elev 3500ft
STAMPEDE PASS SNOTEL as of 10/19/2010

*** Provisional Data, Subject to Change ***

[Graph showing snow accumulation over time from 10/1 to 9/26, with different lines representing different categories such as Precip WY2011, SWE WY2011, Precip WY2010, SWE WY2010, Precip Avg 71-00, and SWE Avg 71-00.]
Summer ocean conditions

- **Upwelling**
- **Downwelling**

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**Smoothed Daily UI at 45N 125W from Apr 2009 to Sep 2010**

**Sea Surface Temperature Anomaly - August 2010**
Based on NOAA AVHRR SST data and AVHRR Pathfinder Climatology
Coastal Upwelling

Winter downwelling was intense, and upwelling was strong in July-August from N. California to SE Alaska.

Area below (above) black line indicates climatological upwelling (downwelling) season.

Climatologically upwelling season progresses from March to July along the west coast of North America from 36°N to 57°N.

Figures provided by Yan Xue, NOAA NCEP
LAST YEAR: U. S. Seasonal Outlooks
October – December 2009
LAST YEAR: U. S. Seasonal Outlooks
January – March 2010


Key
Percentage likelihood of:
A: Above-normal Temperature
N: Near-normal Temperature
B: Below-normal Temperature
White regions over land have climatological probabilities

Probability (%) of Most Likely Category
Below-Normal 40 45 50 60 70
Normal 40 40 45 50 60 70
Above-Normal


Key
Percentage likelihood of:
A: Above-normal Precipitation
N: Near-normal Precipitation
B: Below-normal Precipitation
White regions over land have climatological probabilities
D: Dry Season Masking

Probability (%) of Most Likely Category
Below-Normal 40 45 50 60 70
Normal 40 40 45 50 60 70
Above-Normal
Fall-Winter US climate of 2009-10
Spring 2010 - back to winter!

Temperature Anomalies (F)
Apr to Jun 2010
Versus 1950–1995 Longterm Average

Standardized Precipitation Anomalies
Apr to Jun 2010
Versus 1950–1995 Longterm Average

NOAA/ESRL PSD and CIRES–CDC

NOAA/ESRL PSD and CIRES–CDC

-5.0  -4.0  -3.0  -2.0  -1.0  0.0  1.0  2.0  3.0  4.0  5.0

-3.0  -2.0  -1.0  0.0  1.0  2.0  3.0
Blame the circulation pattern

- observed 500mb height anomalies from Oct-Mar 2010 shows a persistent region of low heights in the Gulf of Alaska and high heights over eastern Canada … very El Niño-like
This year?
Land and Ocean temperature anomaly for January-September 2010 ties the record value from 1998 (+0.65°C above the 20th C avg.)
Temperature Anomalies September 2010
(with respect to a 1971-2000 base period)
National Climatic Data Center/NESDIS/NOAA
Pacific Climate Outlook

- forecasts centered on a strong La Niña event now through winter 2011
- PDO: cool phase sustained with help from La Niña
Typical winter climate pattern jet stream during past La Niña winters
IRI Forecasts from September 2010

OND temperature

OND precipitation

http://portal.iri.columbia.edu/portal/server.pt
IRI Forecasts from September 2010

JFM temperature

JFM precipitation

http://portal.irri.columbia.edu/portal/server.pt
The Bottom line

• expectation for strong La Niña conditions to continue through winter and into spring, favors a cool and wet fall and winter for the PNW region
  – Additional influence from cool phase PDO conditions might offset another factor...
  – a record warm global climate from Jan-Sept 2010

See http://www.cpc.ncep.noaa.gov
AMJ and JAS 2010 500mb ht anomalies

NCEP/NCAR Reanalysis
500mb Geopotential Height (m) Composite Anomaly 1958–1996 climo
NOAA/ESRL Physical Sciences Division

Apr to Jun: 2010

Jul to Sep: 2010