

Summary of the Service Assessment for Pacific Northwest Flood 1–3 December 2007

Event Summary

Over the weekend of 1–3 December 2007, three storms hit the Pacific Northwest in quick succession. The first storms brought rain at low elevations and heavy snow in the Coast Range, Olympics, and Cascades. The third storm was the strongest, and included a rapid rise in temperature (+30 F at both the surface and 850mb in about two hours) that added melting snow to more rain, resulting in significant flooding. Total precipitation over the three days measured over a foot at several locations, and the last storm featured hurricane force winds along and near the coast, resulting in the loss of four buoys.

A greater than 500–year flood occurred along the Chehalis and Skokomish Rivers in southwestern Washington; at Doty, the Chehalis rose from 8' to 30' in 12 hours, putting Interstate 5 under 10 feet of water near Chehalis and Centralia.

Challenge - Long lead times

The National Weather Service's Ocean Prediction Center issued an excellent 96–h forecast of the event on 28 Nov, citing QuikScat–derived surface winds over the ocean as key to diagnosing the situation and lending credibility to the model results.

The Portland forecast office issued a Hurricane Force Wind Warning the afternoon of the 1st, providing 33h advance warning to their customers.

Heavy rain was predicted well in advance, although at 4" – 9", the forecast amounts were well below the actual precipitation in many locations.

Challenge - Getting the word out

Portland and Seattle include tone–alert coding (manually added in the NOAA Weather Radio message composition) for “major” flood warnings. This was requested by their customers and has proven to be very effective in calling out the “take action” events for the local EM communities. An automated method of including the tone alerts would be of great value.

Portland and Seattle each hosted Web conferences the day before the first storm, which has proven to be an effective means of reaching a broad audience simultaneously.

Challenge - Land/water interface

NWS issues separate warning for land and water areas along the coasts (and Great Lakes). Various

limitations in the current warning system result in the land–water interface being poorly handled in many cases, resulting in both reduced forecaster efficiency and less–than–desirable accuracy in the warned areas.

Challenge - Juggling multiple warning systems

Forecasters had some difficulties with RiverPro (river stage warnings), but the larger issue in creating the dozens of statements and warnings that went out was dealing with the Graphical Hazards Generator (long–fused warnings), WarnGen (short–term storm/flood warnings), and RiverPro, all of which were well exercised during the event. To that end, Recommendation 3 of the Assessment Report reads, in part, “The preparation of Outlooks, Flood Warnings, Flood Statements, and Areal Flood Warnings should be combined into a single software application in AWIPS II in order to improve forecaster efficiency.” (This assessment was issued in September 2008. By that time, the Next Generation Warning Tool Integrated Work Team had been formed – with a solution “likely not operational until 2010”.)