Performance Measure or Milestone		Quarterly Cumulative	Yearly Cumulative	Targets										R20/R2A Link	Point of Contact	Status/Comments/Documentation
Cumulative Measure				15 Q1	15 Q2	15 Q3	15 Q4	16	17	18	19	20	21			
Number of ESRL-PSD peer-reviewed publications		x		20	40	60	80	80	80	80	80	80	80		R. Lataitis	Q1: Q2: Q3: Q4:
Develop one science and technology product per quarter related to PSD hydrometeorological, boundary layer, or ocean process understanding		x		1	2	3	4	4	4	4	4	4	4		A. White C. Fairall R. Cifelli J. Whitaker	Q1:Added operational numerical weather prediction output (HRRR and RAP models) to the award-winning PSD flux tool that is available on the PSD web site: (http://www.esrl.noaa.gov/psd/data/obs/datadisplay/ViewDataType.php?DataTypeID=67&SiteID=bby). Q2: Q3: Q4:
Cumulative assessments of climate extreme events, anomalies and trends		x		1	0	0	2	2	2	2	2	2	2		M. Hoerling	Q1: Q4:
Cumulative site-years of data collection, cruises, or flight projects for cryospheric, boundary layer mean and turbulent properties, hydrometeorological, and oceanic process studies			x	0	0	0	95	105	115	125	135	145	155		C. Fairall A. White	Data archives can be found at: Cryospheric: http://www.esrl.noaa.gov/psd/arctic/data/index.html Boundary Layer: http://www.esrl.noaa.gov/psd/technology/bao/ Hyrdrometeorological: http://www.esrl.noaa.gov/psd/psd2/index.html Oceanic Processes: http://www.esrl.noaa.gov/psd/psd3/cruises/
Milestone																
PSD-1															Hoerling	
Advance Predictive Understanding of the Climate System																
Predictability Sources	Produce two or more predictability assessments of subseasonal to decadal regional climate trends and extremes			x	x									NWS & NIDIS	Zhang, Perlwitz, Kiladis	QI: Perlwitz, J., M. Hoerling, and R. Dole, 2014: Arctic Tropospheric Warming: Causes and Linkages to Lower Latitudes. J. Climate. doi: 10.1175/JCLI-D-14-00095.1, in press. Seager, R, M. Hoerling, S.Schubert, H.Wang, B.Lyon, A.Kumar, J. Nakamura, and N. Henderson, 2014: Causes and Predictability of the 2011 to 2014 California drought, Report of the NOAA Drought Task Force. http://cpo.noaa.gov/MAPP/californiadroughtreport Q2:
Models	Transfer experimental guidance for subseasonal-to-seasonal predictions to CPC				x									NWS CPC	Newman	PSD-developed tropical LIM tool
Applications	Enhance the Climate Change web portal to display measures of extremes and potential tipping points in terrestrial and marine ecosystems to support fisheries science experts vulnerability assessments of U.S. marine fish stocks						x							NMFS & USBR	Alexander	
Foundational Science on Extreme Events																
Observations	Complete a next-generation Historic Climate Reanalysis based on more land and marine observations back to the mid 19th century, with improved Arctic representation						x							DOE	Compo	
Attribution of Evolving Climate and Extremes																
Observations	Produce two or more attribution assessments of climate extremes and changes in extreme events			x			x								Hoerling, Eischeid, Quan	QI: Hoerling, M., and Coauthors, 2014: Northeast Colorado extreme rains interpreted in a climate change context [in "Explaining Extremes of 2013 from a Climate Perspective"]. Bull. Amer. Meteor. Soc., 95 (9), S15-S18. Herring, S. C., M. P. Hoerling, T. C. Peterson, and P. A. Stott, Eds., 2014: Explaining Extreme Events of 2013 from a Climate Perspective. Bull. Amer. Meteor. Soc., 95 (9), S1-S96. Q4:
Models	Increase the number of climate models, and increase the total number of simulations, used to assess extreme weather and climate events					x									Allured, Xu, Zhang, Quan	
PSD-2															White	
Observations of High-Impact Weather and Water Processes																
Observations	Increase the number of hydromet observations available to better monitor and increase the predictive understanding of droughts and floods					x								Sandy Supplemental coastal AROs - local NWS WFO access to data and training	King	
Data	Develop two value-added data displays that take advantage of PSD and/or operational observing networks to support end user decision-making					x									Gottas	
Data	Develop in-house AWIPS II capability to increase use of PSD observations and data products in NWS forecast operations.						x								Gottas, Coleman	

	Description													Partner	PI	Notes/URL
Improved Understanding of High-Impact Weather and Water Processes																
Process Studies	Produce two physical process studies that provide an improved understanding of recent extreme weather and/or hydrologic events					x	x									White	
Improved Prediction of High-Impact Weather and Water Processes																
Models	Produce an evaluation of a distributed hydrologic model and assess it's skill for predicting short‑term high‑impact hydrologic events in an operational environment.					X									Monterey WFO NWS Western Region	Johnson	
Models	Develop an experimental capability to couple a tributary and coastal storm model to simulate coastal storm surge and flooding						x									Cifelli	
Applicatons	Literature Review and Scientific Synthesis on the Efficacy of Winter Orographic Cloud Seeding				X										USBR	Cifelli	http://www.usbr.gov/main/qoi/docs/Literature_Review_and_Scientific_Synthesis_of_the_
PSD-3																**Fairall**	
Observations of Critical Regional Weather and Climate Processes																
Observations/Data	Collect and archive 1 year of Arctic observations to advance understanding of the surface heat balance and maintain a baseline to assess climate variability.						x									Uttal, Shupe, Crepinsek, Konopleva, Cox, Miller	at NOAA Arctic SEARCH Observatories (Tiksi, Atert, and Eureka)
Observations/Data	Collect and archive data from a major field program to improve model realizations of precipitation on the U.S. West Coast.					x	x									Fairall	1 ship and 2 aircraft platforms from the CALWATER-2 field program
Observations	Design and deploy wind profiler field sites for the WFIP project to improve short term wind forecasts for renewable energy applications.						x									Wilczak	
Technology Development	Develop prototype fast pressure and turbulence measurement system for an Arctic‑hardened ship‑based flux measurement system						x									Pezoa	For the ONR Sea‑State FY15 Arctic cruise
Technology Development	Develop and test UAS platforms to improve NOAA's lower polar atmospheric and surface observing capabilities						x									DeBoer	
Improved Understanding of Critical Regional Processes																
Observations ‑ Process Studies	Evaluate impacts of spatial and temporal variability of surface‑atmosphere exchanges on Arctic boundary layer climatology						x									Uttal	…at IASOA sites (http://www.esrl.noaa.gov/psd/iasoa/home2)
Improved Prediction of Critical Regional Weather and Climate Processes																
Models	Release version 12 of the PSD air‑sea flux parameterization that better represents the physics of very high winds (hurricanes) in global data assimilation models						x								NASA GEOS 5	Fairall	
Models	Run and archive an ensemble of large-eddy model simulations to evaluate ice formation mechanisms in Arctic mixed‑phase clouds.						x									Shupe, Solomon	