

To: Potential Science Team Members for proposed “CalWater” Study
From: Mr. Guido Franco, California Energy Commission
Dr. F. Martin Ralph, NOAA Research
Dr. Dan Cayan, Scripps Institute of Oceanography

Re: Planning for 2009/10 “CalWater” study; Science Team Coordination

We are writing to invite your participation to help plan a field-based study during 2009-2010, of the effect of aerosols on hydrologic phenomena in California. Several recent developments, in both science and society, motivate us to better understand how aerosols affect precipitation and snowpack in California.. Some of the key questions lie at the interface between regional climate, water and energy..

We have formulated an initial outline for a scientific study to focus on these issues in California, including a major field study in the winter-2009/10 time frame. Please see the attached White Paper for details. We would now like your input to develop a detailed science plan associated with this, including refinement and addition of scientific hypotheses as well as critical elements of an implementation strategy. Four subjects of initial interest that should be addressed are:

- Long-range transport and deposition of black carbon on snow, and its impacts
- Reducing uncertainties in the impacts of anthropogenic aerosols on precipitation
- The role of shallow (non-bright-band) rain processes in modulating aerosol impacts on precipitation and on deposition of black carbon
- Understanding the role of atmospheric rivers on black carbon transport, aerosol entrainment and precipitation formation, for both water supply and extreme events.

A key step in this process is to bring together a group of experts on these subjects for a 1-2 day meeting to develop the detailed science plan. We hope you will be able to join. This plan will be used by both CEC and NOAA as input into investment planning and resource allocations. We will hold the planning meeting at Scripps Institution of Oceanography, and have identified two (alternative) time slots: Aug 19-22 and Sept 15-17, 2008. *Please contact us, no later than June 9, to indicate your availability and preference to attend the meeting on one or both of these times.*

It is anticipated that a range of field observations already in place as part of NOAA’s Hydrometeorological Testbed (HMT; hmt.noaa.gov) and related projects studying atmospheric rivers will be available for use in this study. CEC is considering investment in additional observations driven by the science plan, as well as principal investigators needed to conduct the science. Additionally, it is likely that Unmanned Aircraft Systems (UAS) could be available for this study, both low-altitude and high-altitude long-endurance systems capable of measuring conditions over the Pacific Ocean upwind of California. The proposed CEC-NOAA partnership is consistent with NOAA's emerging vision for a national climate services partnership to manage risks associated with climate

using a distributed network of regional resources working in close collaboration to ensure that actionable, issue-focused information is produced and evaluated.

Prior to the meeting we anticipate arranging for short (2-3 pages) white papers to be prepared on each of the four scientific foci listed above. We will also develop a draft field plan showing what equipment is likely to be in place as part of related projects already underway.

The following tentative timeline has been developed to help frame the planning:

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| August/Sept 2008: | CalWater Science Plan meeting (at Scripps) |
| August 2008: | NOAA's HMT Action Plan completed |
| 1 October 2008: | Joint CEC-NOAA Science Plan completed Includes Proposed Experimental Design (could include a limited "Early Start" data collection for winter 2008/09) |
| 15 November 2008: | "Early start" observations in place collecting data |
| 1 January 2009: | NOAA and CEC overall resource levels defined |
| 1 July 2009: | Specific CEC and NOAA projects approved Includes final experimental design and implementation plan |
| 1 November 2009: | Automated field sites in place and collecting data |
| 31 March 2010: | Data collection completed |
| 30 September 2011: | Initial analysis completed and formal publications submitted |

Thanks for your consideration. We hope that you will be able to attend the planning meeting at Scripps in August or September, and await your reply.