ATLAS OF THE WATER-FROM-AIR RESOURCE FOR CALIFORNIA

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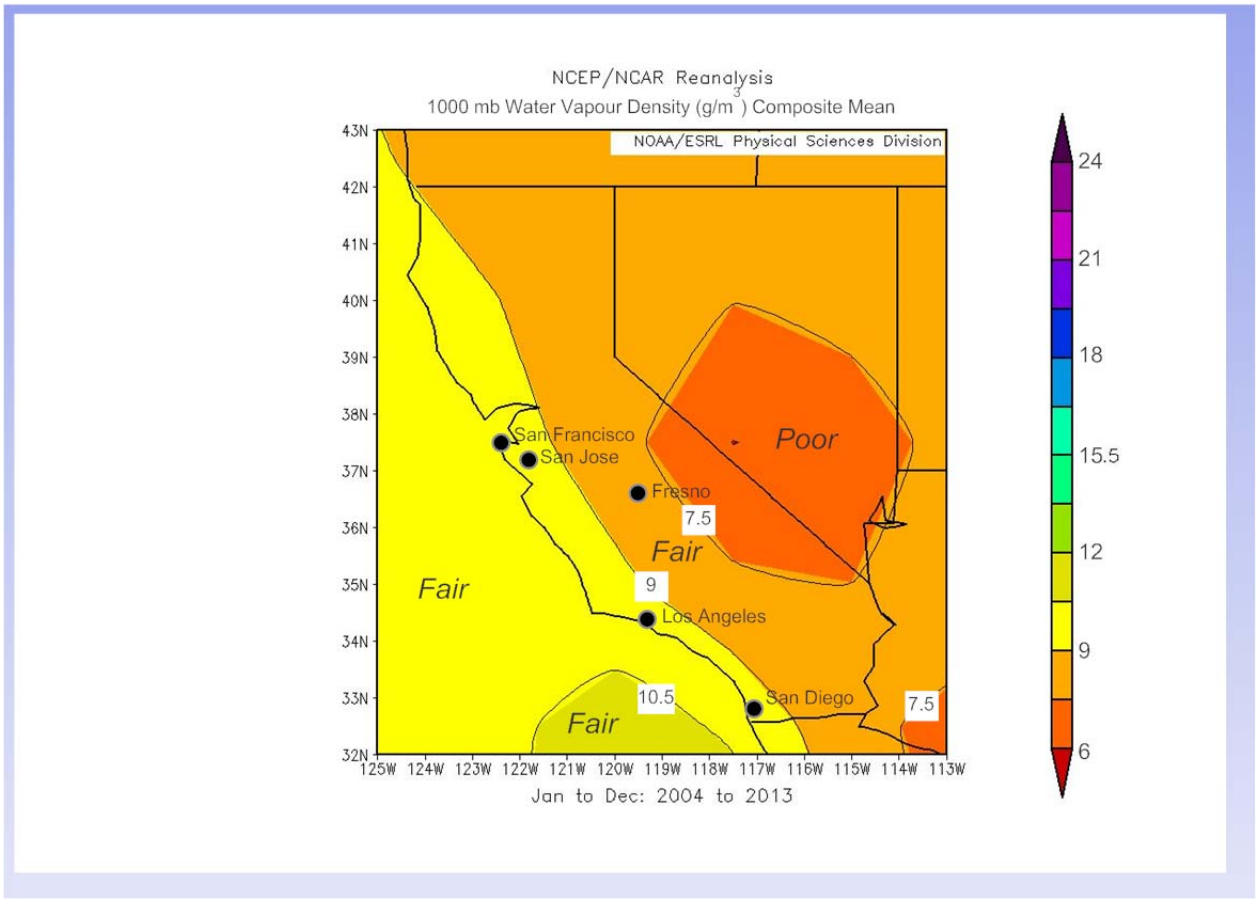
—SCIENTIFIC LEADERSHIP FOR THE WATER-FROM-AIR INDUSTRY—



Cover image: California's composite mean water vapour density field for the ten year period 2004–2013. Basis for image provided by the NOAA/ESRL Physical Sciences Division, Boulder, Colorado from their web site at http://www.esrl.noaa.gov/psd/; NCEP Reanalysis dataset (Kalnay, E. and Coauthors, 1996).

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INTRODUCTION

"California's worst-ever drought" (Berkowitz, 2014) demands innovative solutions. The use of water-from-air machines or atmospheric water generators to provide emergency drinking water in California has been discussed in the media (for example: Bigler, 2014; Brewer, 2014).

Readers unfamiliar with water-from-air technologies are encouraged to visit:

- Wikipedia: Atmospheric water generator, http://en.wikipedia.org/wiki/Atmospheric_water_generator, and
- Atmoswater Research, http://www.atmoswater.com/
    - Links to articles, patents, and equipment manufacturers/suppliers

To use water-from-air technologies effectively, it is crucial to understand the characteristics of the water-from-air resource in California. Through maps and charts, this atlas facilitates acquiring knowledge about the resource.

The extremely low impact on the atmosphere's water vapour content by the widespread use of water-from-air machines is addressed in Appendix 1.

The first section of the atlas presents monthly maps of the water vapour density field across California. These maps are based on the specific humidity composite mean fields for months in the ten-year period 2004–2013. The specific humidity maps were created using the Monthly/Seasonal Climate Composites application provided by the U.S Department of Commerce National Oceanic and Atmospheric Administration at http://www.esrl.noaa.gov/psd/cgi-bin/data/composites/printpage.pl. Appendix 2 explains how the base maps showing specific humidity were transformed into the final maps showing water vapour density and additional information.

The second part of the atlas contains charts of water-from-air resource analyses for selected locations in California. The locations were selected to represent the range of climate zones, latitudes, and elevations in the state.

The audience for this atlas is the water-from-air industry community, water resource administrators, elected officials, and the interested public. This atlas is also of interest to engineers and technicians in the heating, ventilation, and air-conditioning (HVAC) industry because the local water vapour density represents the latent portion of the cooling load attributable to outdoor air for HVAC equipment at the site.