

# TAHOE: STATE OF THE LAKE REPORT 2013

## CLARITY

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### Annual average Secchi depth

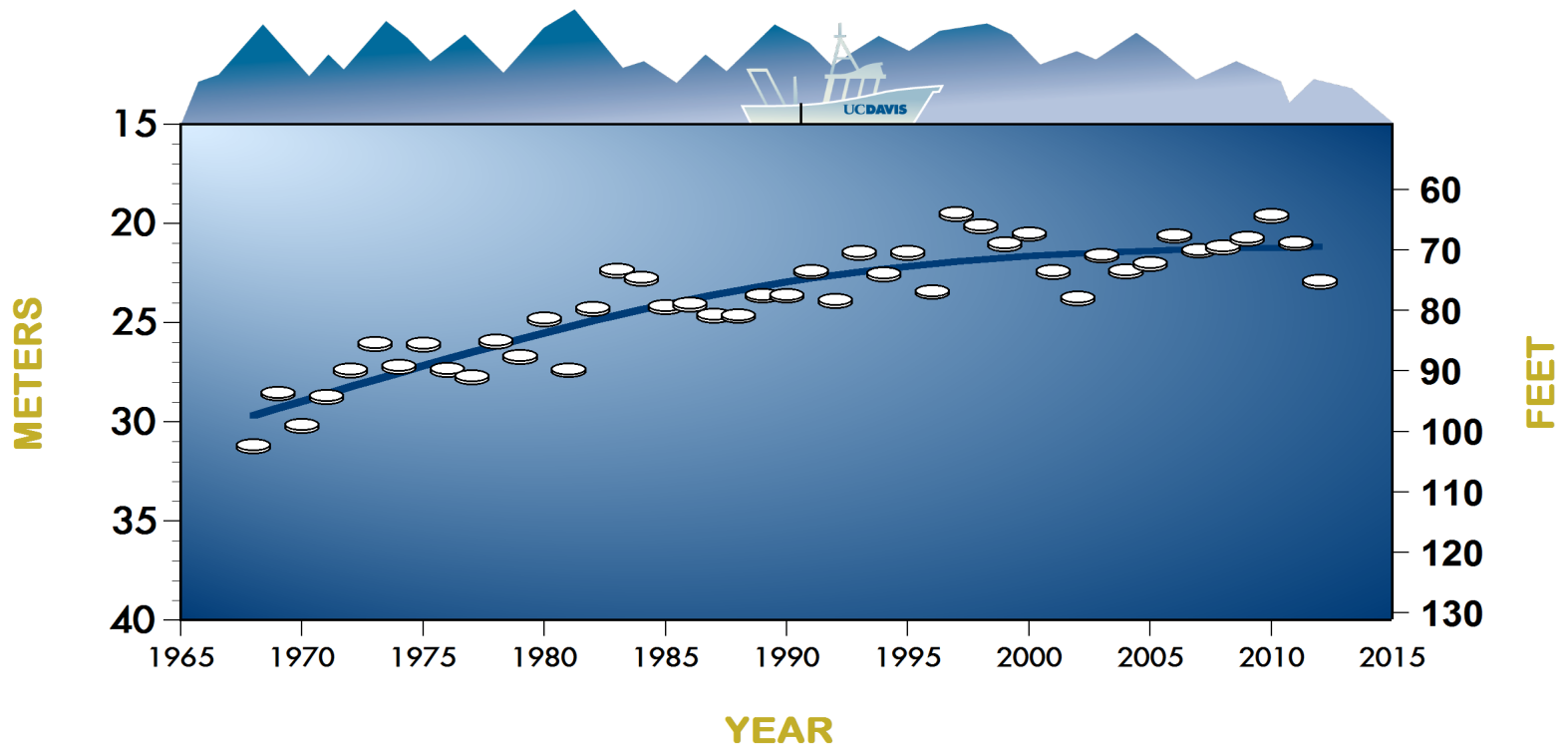
Yearly since 1968

In 2012 the annual average Secchi depth was 75.3 feet, an improvement of 6.4 feet over the previous year. This was the second consecutive year of improved annual average clarity. The annual average clarity in the past decade has been better than in

recent decades. In 1997-1998, annual clarity reached an all-time average low of 65.1 feet. From 2003-2012 the average clarity was 70.1 feet. The clarity level is the average of 22 individual readings taken throughout the year. The highest individual value

recorded in 2012 was 107 feet, and the lowest was 57 feet. It is important to understand the causes of clarity change and to evaluate past actions and future investments. Some critical knowledge gaps are in the monitoring of urban stormwater flows.

### ANNUAL AVERAGE SECCHI DEPTH



## CLARITY

### Winter Secchi depth

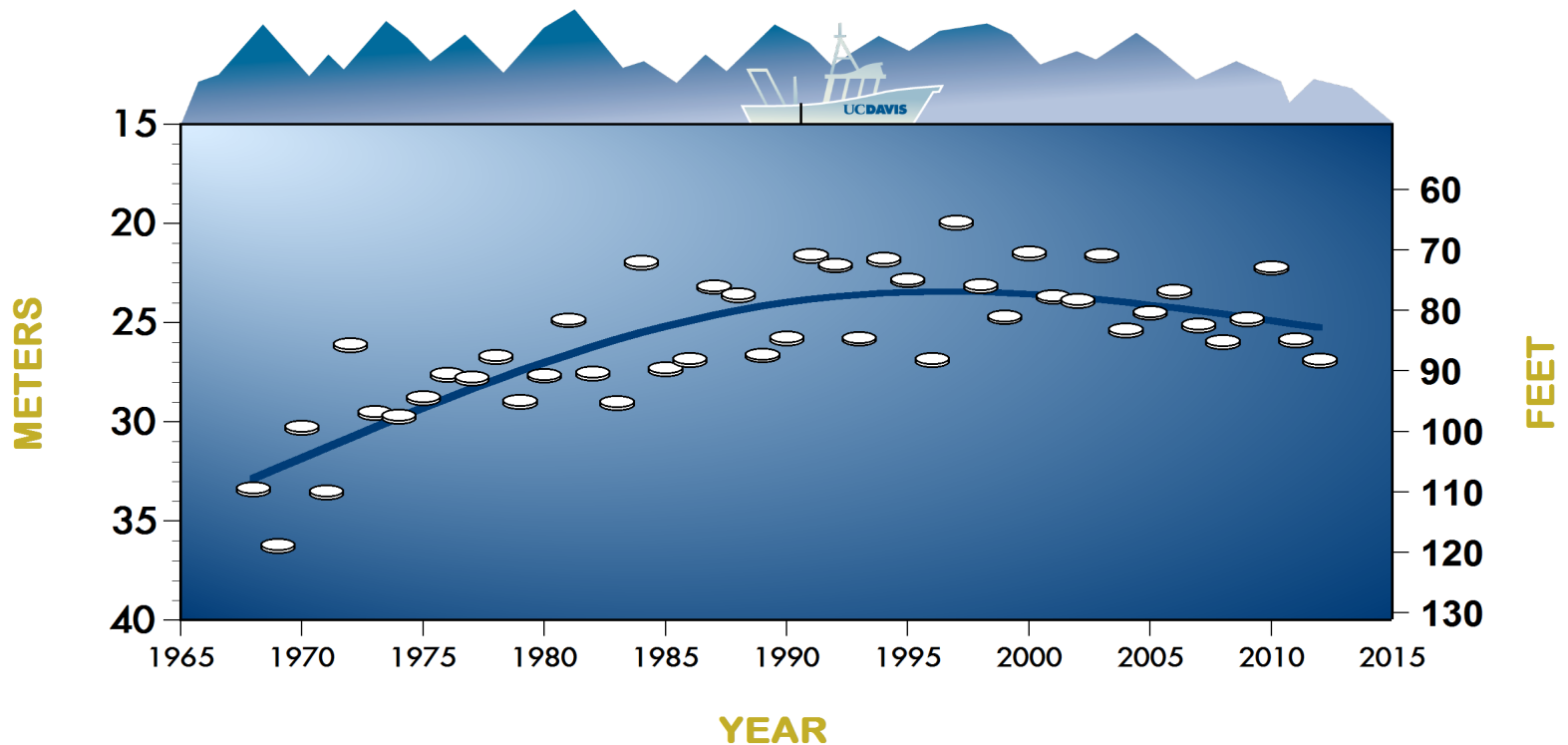
Yearly since 1968

Annual winter (December-March) Secchi depth measurements from 1968 to the present indicate that winter clarity at Lake Tahoe is showing definite improvement. In 2012, the winter clarity increased to 88.3 feet, well above the worst point seen in 1997. The reasons behind the

continued improvement in winter clarity are not fully understood, but possibly tied to reductions in the quantity of fine particles from urban stormwater. Dry conditions in 2012 contributed to the trend. Urban stormwater is the largest source of fine particles to Lake Tahoe, and

generally enters the lake in winter. A comprehensive, regional urban stormwater monitoring plan is needed to determine if recent capital investments in stormwater projects have indeed reduced these loads.

### WINTER SECCHI DEPTH



## CLARITY

### Summer Secchi depth

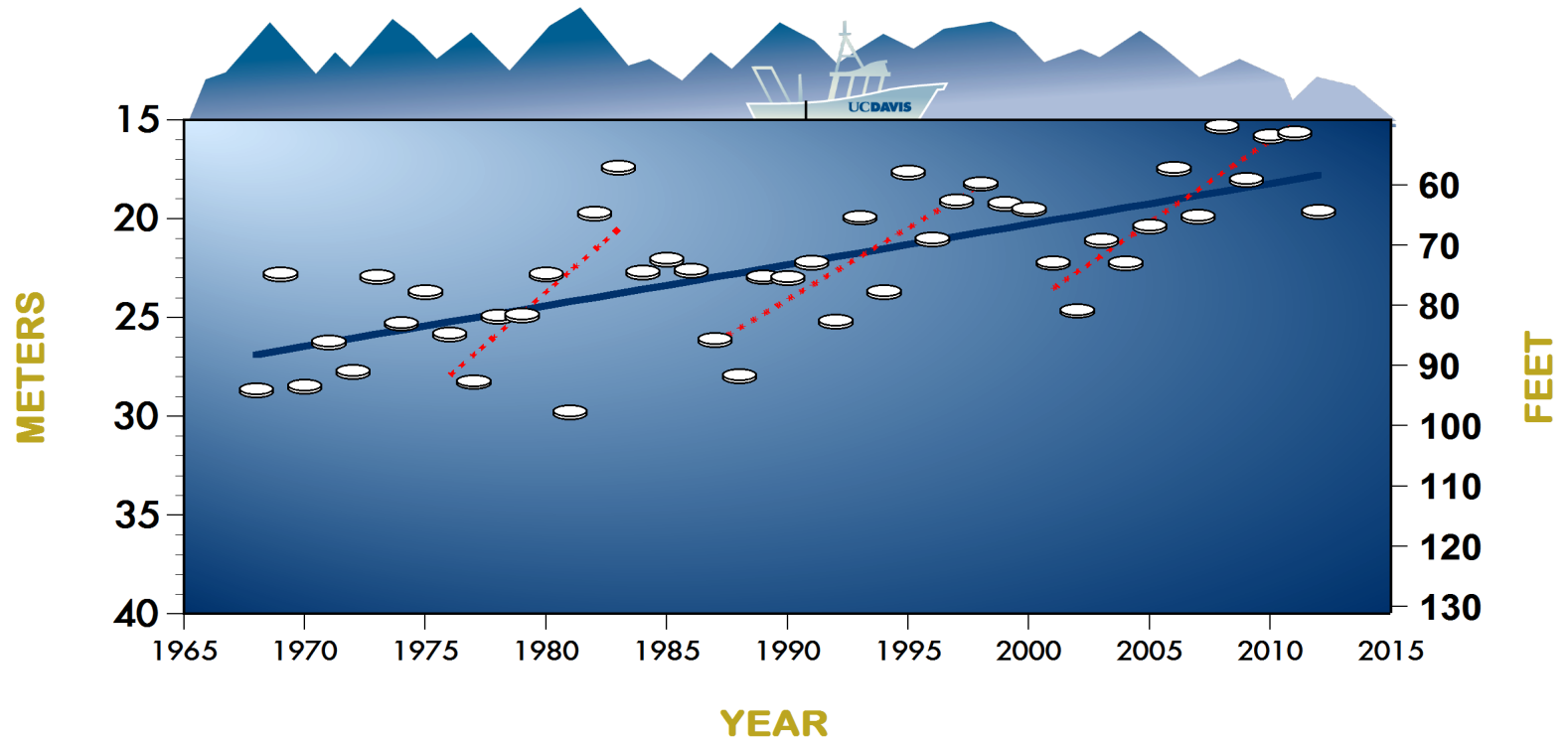
Yearly since 1968

Summer (June-September) clarity in Lake Tahoe in 2012 was 64.4 feet, an improvement of over 13 feet from 2011. This coincided with a decline in the concentration of small algal cells in 2012. Despite this improvement,

the summer trend is dominated by a consistent long-term decline but with a noticeable 10-15 year cyclic pattern. The red dashed lines are linear regressions for the periods: a) 1976 to 1983, b) 1987-1998, and c) 2001 to 2011. The

most recent improvement may be a continuation of this cyclical trend. The reasons behind this periodicity are being investigated.

### SUMMER SECCHI DEPTH



## CLARITY

### Light transmission

In 2012

A light transmissometer measures what percentage of a given wavelength of light is transmitted over a 10 inch path length. Here, the light transmission through the full depth of the lake is shown at four times

a year. It is evident that the lowest light transmission is in the surface layers where typically less than 93 percent of light is transmitted. The highest light transmission is in the very deepest parts of the lake where

as much as 96 percent of the light can be transmitted. The reason is that fine particles are believed to aggregate into larger particles that rapidly settle out in the deep water.

