Using Performance Data to Drive Change:

Review work done to assess the performance of living shoreline techniques, and discuss the technical feasibilities and limits of their use.

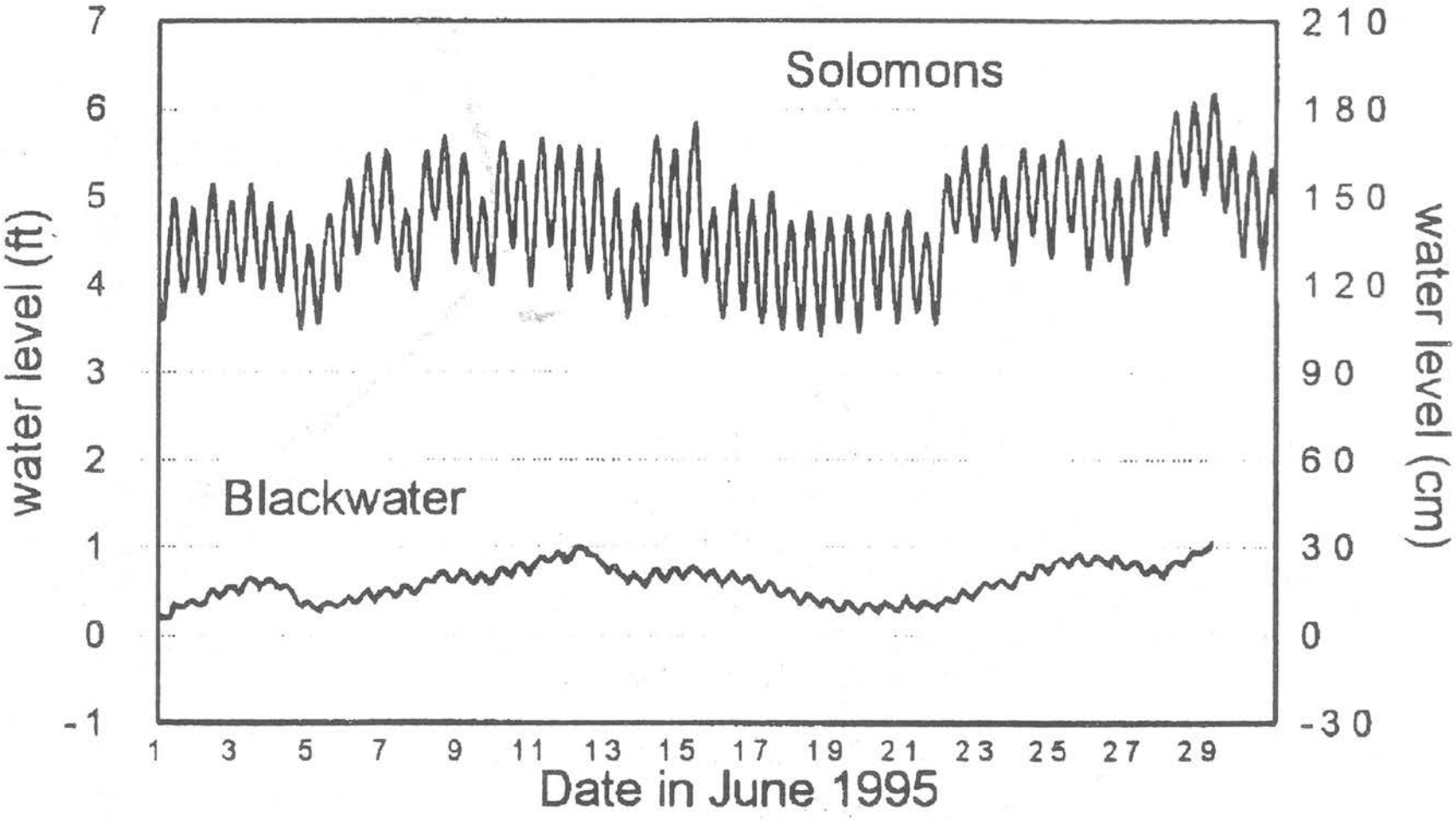
Court Stevenson, Univ of Md, Horn Pt Lab - moderator

Evamaria Koch. Univ of Md, Horn Pt Lab

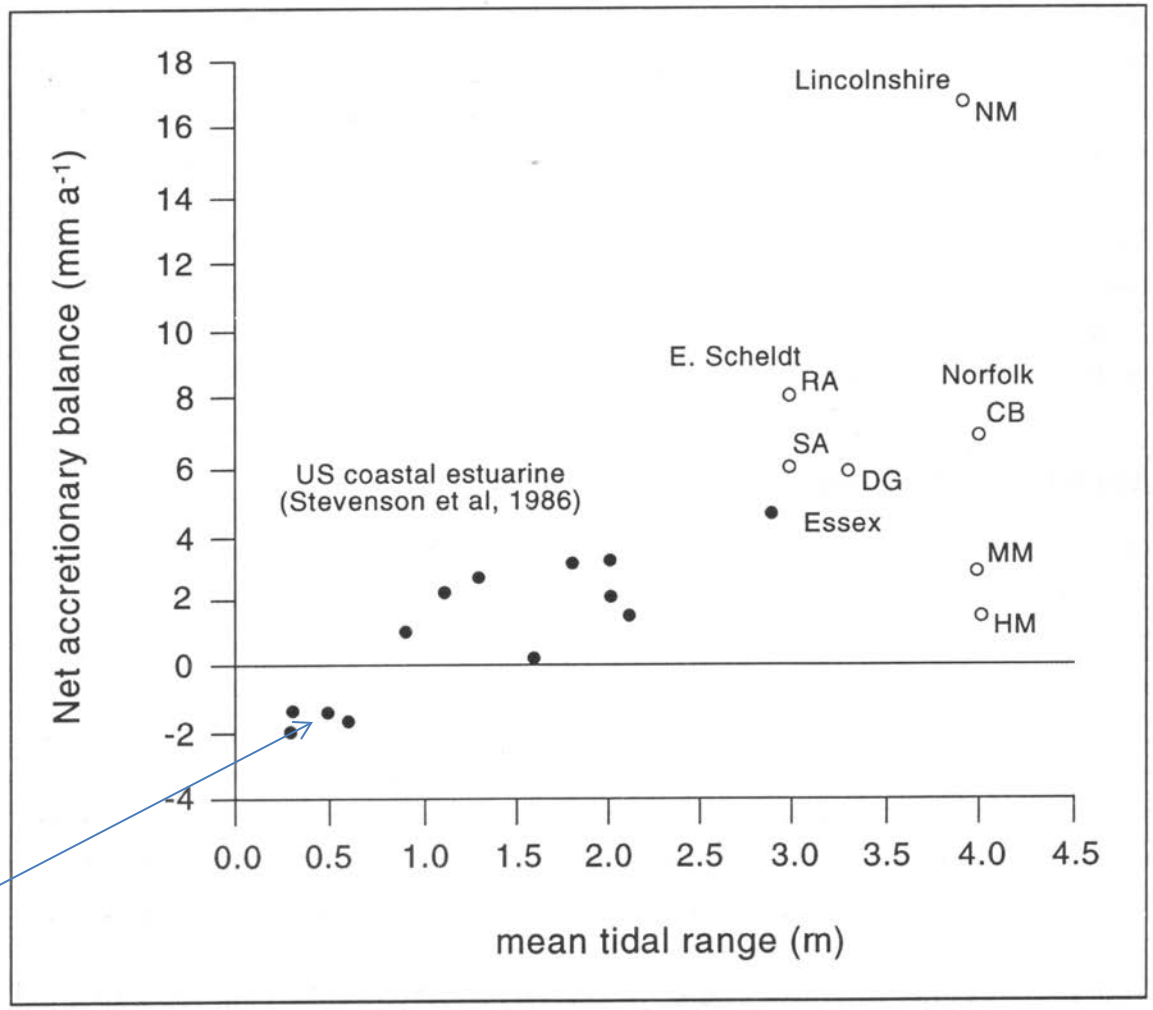
Pam Mason, Virginia Institue of Marine Science

Group Discussions: What needs to be done moving forward?


THE CHESAPEAKE BAY
DELAWARE BAY
ATLANTIC OCEAN



Source: Stevenson et al. 2000



Louisiana & Blackwater Marshes

Fig. 5.6 Plot of accretionary balance (mean annual accretion − local relative sea level rise) versus mean tidal range. After French (1994): CB = Cockle Bight, Scolt Head Island; MM = Missel Marsh, Scolt Head Island; HM = Hut Marsh, Scolt Head Island; DG = Dengie, Essex; NM = New Marsh, Gibraltar Point; RA = Rattekaai, East Scheldt, the Netherlands; SA = St Annaland, East Scheldt, the Netherlands

Source: Viles & Spencer. 1995. Coastal Problems: Geomorphology, Ecology… Arnold, London

Sill along Living Shoreline at Aspen Institute on Back Wye R, Queen Anne Co, MD

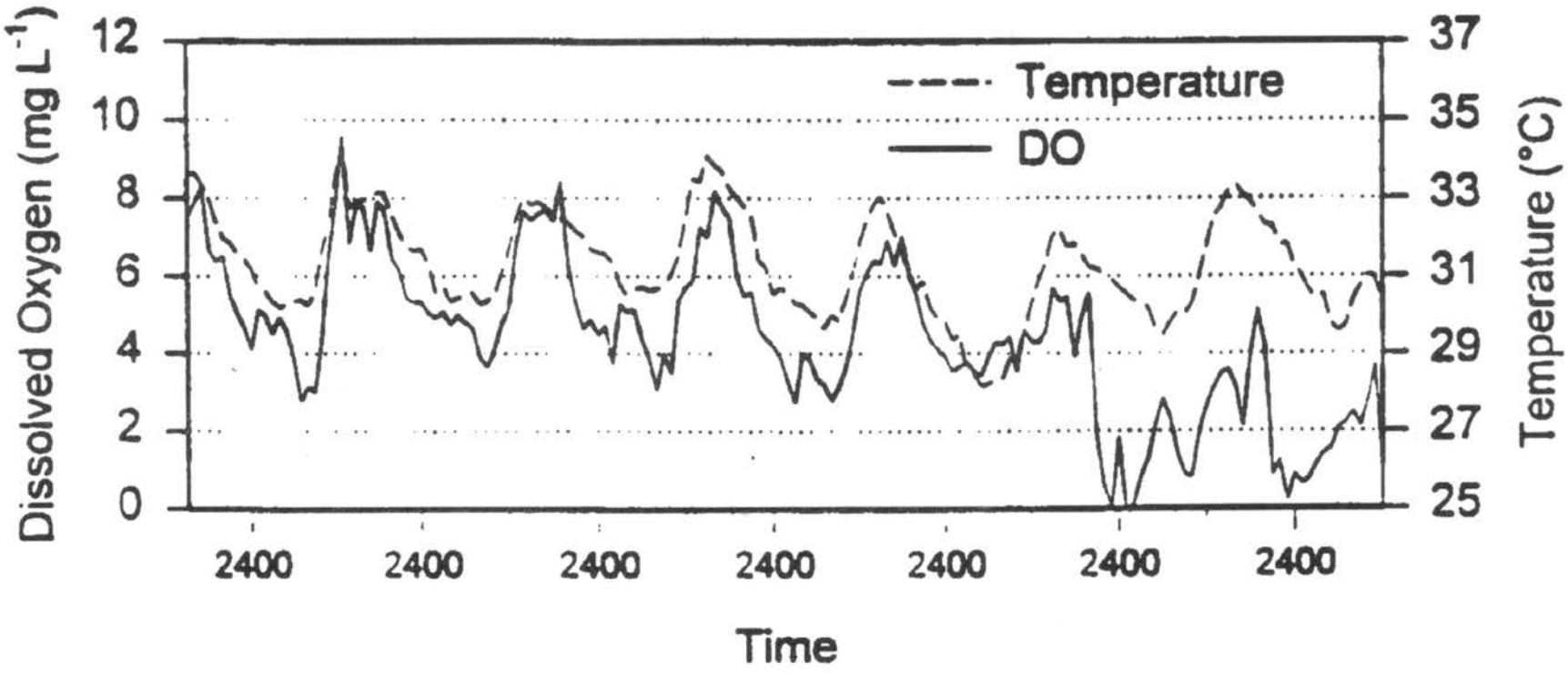
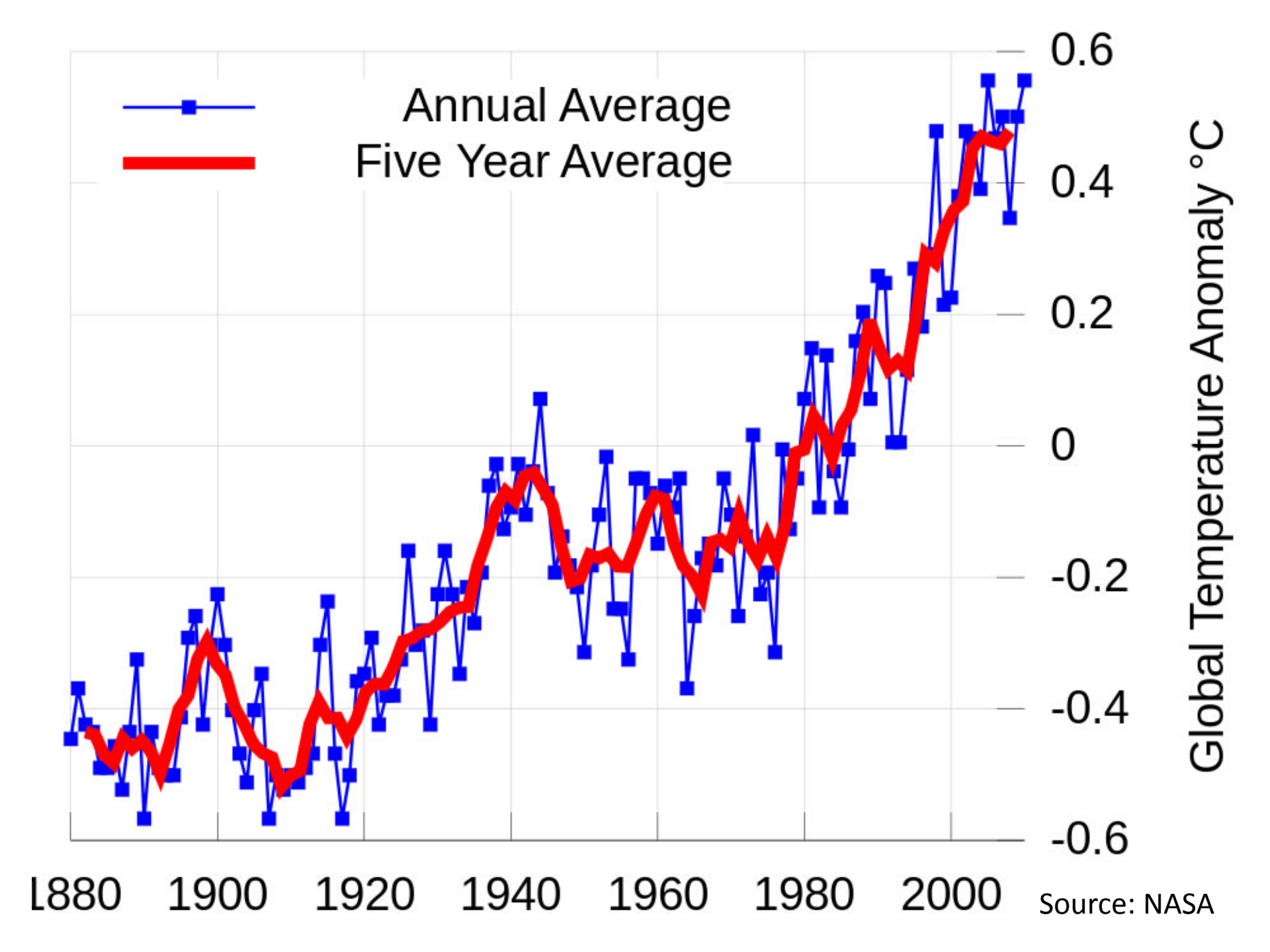
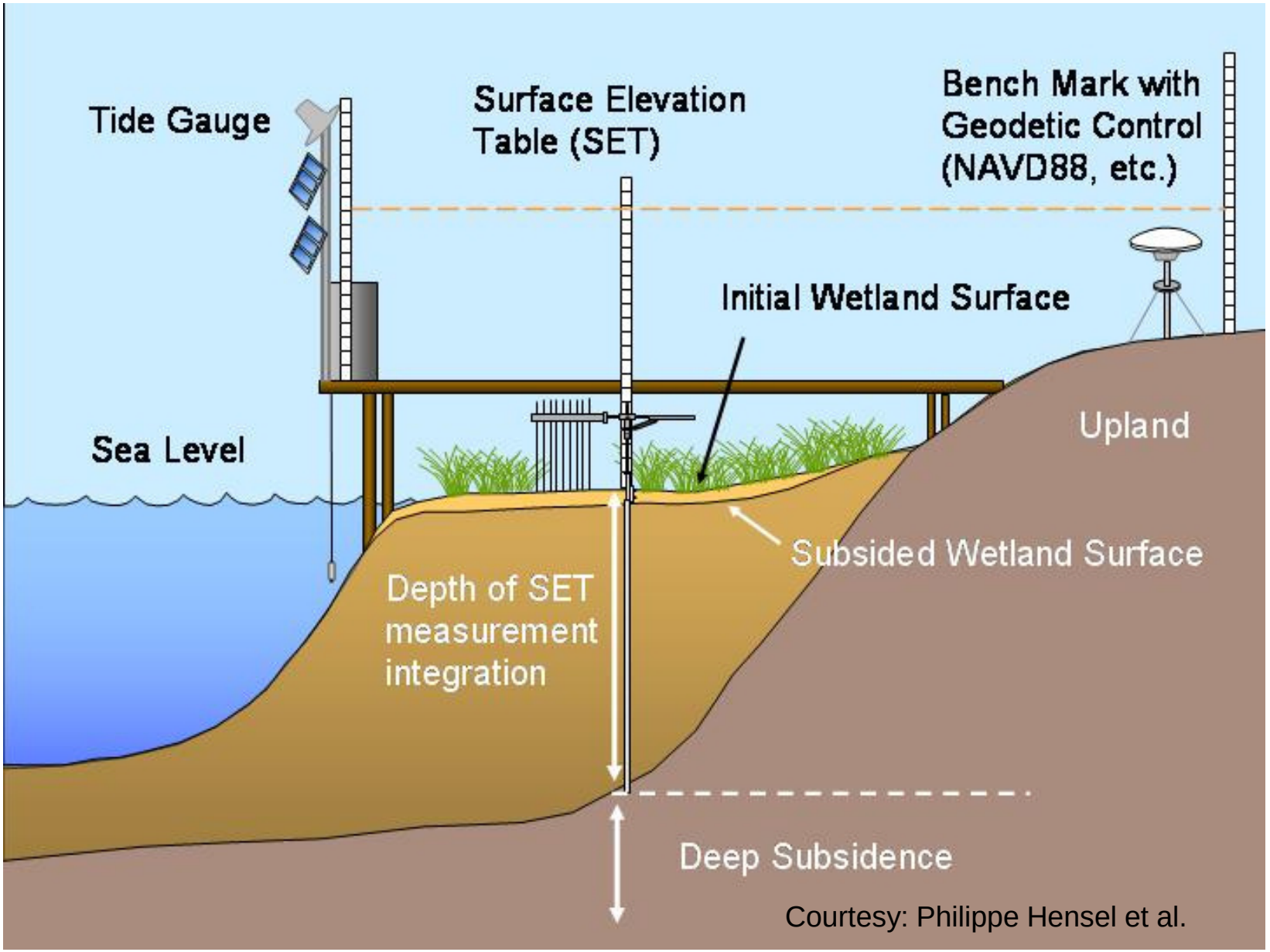
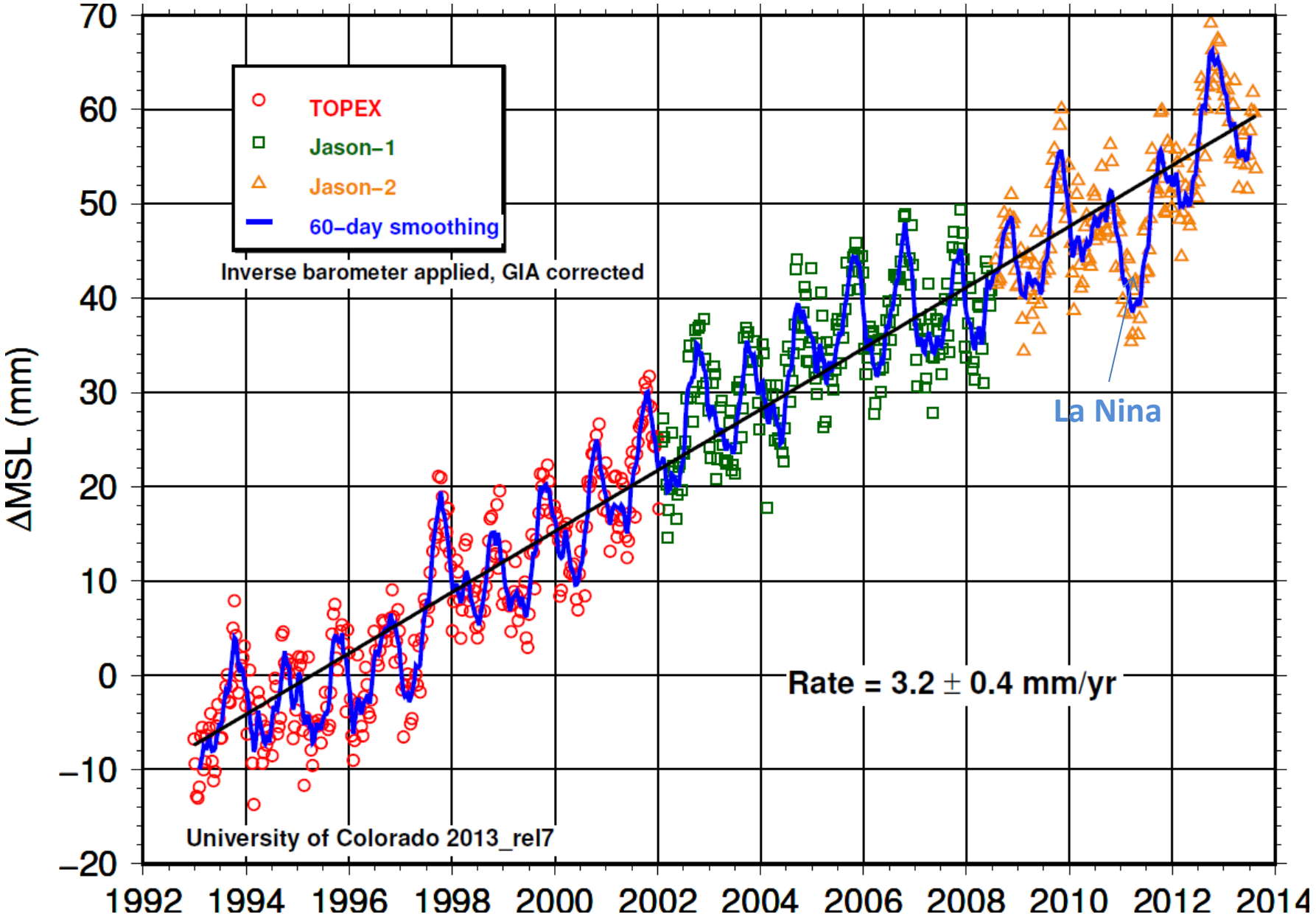


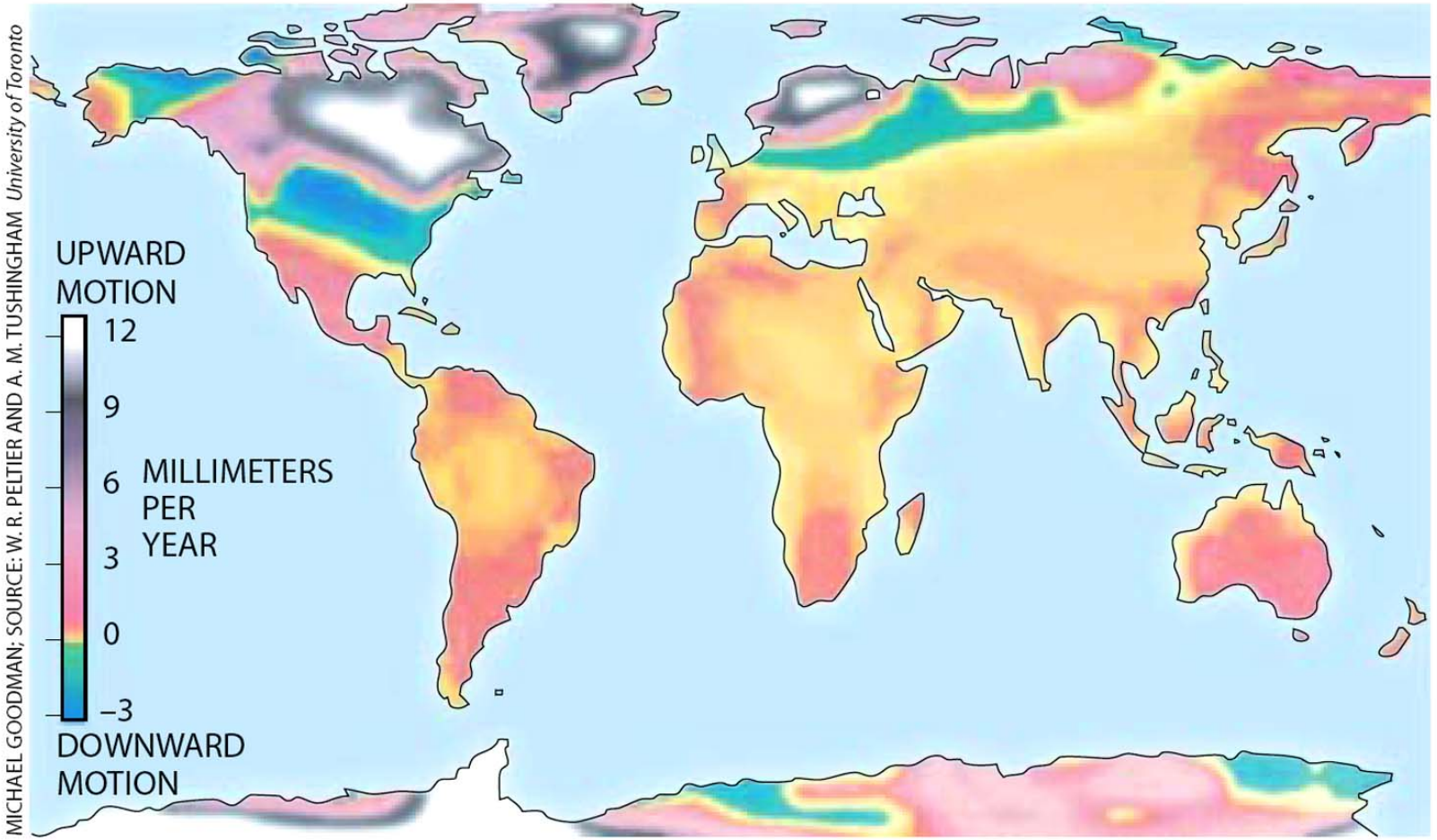
Figure 8. Dissolved oxygen concentrations in July of 1995 at Blackwater NWR. Data were collected with a Hydrolab data logger at mid-depth in approximately 1 m of water in the Blackwater River immediately east of the Rte. 335 bridge.


Annual Average
Five Year Average
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Global Temperature Anomaly °C
1880
1900
1920
1940
1960
1980
2000

Source: NASA


Tide Gauge
Surface Elevation Table (SET)
Bench Mark with Geodetic Control (NAVD88, etc.)
Initial Wetland Surface
Sea Level
Upland
Subsided Wetland Surface
Depth of SET measurement integration
Deep Subsidence
Courtesy: Philippe Hensel et al.


TOPEX
Jason–1
Jason–2
60–day smoothing
Inverse barometer applied, GIA corrected
ΔMSL (mm)
70
60
50
40
30
20
10
0
–10
–20
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
La Nina
Rate = 3.2 ± 0.4 mm/yr
University of Colorado 2013_rel7



POSTGLACIAL REBOUND, the slow recovery from the deformation caused by weighty ice sheets, accounts for the vertical movement of the land in many parts of the world. These shifts, which have been continuing since the last ice age ended, affect relative sea level at the coastline in a manner that varies from place to place. Such movements can confound tide-gauge records obtained from coastal sites and thus complicate efforts to track the overall change in global sea level.

From: Schnieder D. Sci. Amer. 1997

SET measurements in *Spartina alterniflora* marshes > 1 cm per yr at Poplar Is., but only 0.5 mm per yr in high marsh (*Spartina patens*)

Poplar Island – July 2006

Photo by Jane Thomas
UMCES

Using a semi-empirical approach, Stefan Rahmstorf projects that global sea level rise by 2100 could reach 1.4 meters (4.6 ft) -- it will be even higher in the Mid-Atlantic due to subsidence!