OPAL WATER CENTRE PROJECTS
RESULTS: 2010

SLAPTON LEY, DEVON
OPAL South West Region

Find out more about OPAL in the South West Region?
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Site Description (Ordnance Survey Grid Ref: SX 8267 4405)
Slapton Ley is the largest natural freshwater lake in southwest England. It was created by rising sea levels and coastal sediment damming a small estuary by a shingle barrier. The large (219 ha) freshwater lake and wetland area situated behind the barrier creates a diverse and nationally important range of habitats. The site is extensively used by students from the Slapton Ley Field Centre and visited by tourists. The OPAL Water Team has been regularly visiting the site since 2008 to collect water samples and measure properties of the lake water and will continue until 2012.


Depth Profiles
Measurements taken by probes at every 0.5m depth show how the water body changes through the year (below). Our results show that the water column is well mixed by wave activity. In summer 2008 we measured a significant decrease in dissolved oxygen with depth, this is probably common and due to biological activity in the lake water.
Lake Water Temperatures: From a logger that has been submerged at a depth of 0.5 m from April 2009 to April 2010

Water Chemistry
Water samples collected quarterly since 2008 have been analysed in the laboratory for a range of physical, chemical and biological measurements. Data gathered during the OPAL project will show us how the water in the pond changes over the year and the overall quality of the water. Phosphorus (a nutrient in aquatic systems), suspended solids and chlorophyll (abundant in algae) show some clear seasonal variation. We are also measuring levels of metals and organic pollutants in the water. Levels of mercury (bottom graph, below) can be seen to have varied seasonally, with the two highest values recorded in spring. Our understanding of why this and other processes are occurring will increase as the monitoring programme continues and we learn more about Slapton Ley.

Historical Change
Lake sediment cores provide a natural archive of changes that have taken place in the lake as well as pollution deposited onto the lake surface. A core from Slapton Ley was taken in 2008. By measuring the concentration of natural and man-made isotopes we can calculate that sedimentation has been steadily increasing in the 20th century. We will use this dating information to help us explain other changes we measure in the sediment record.