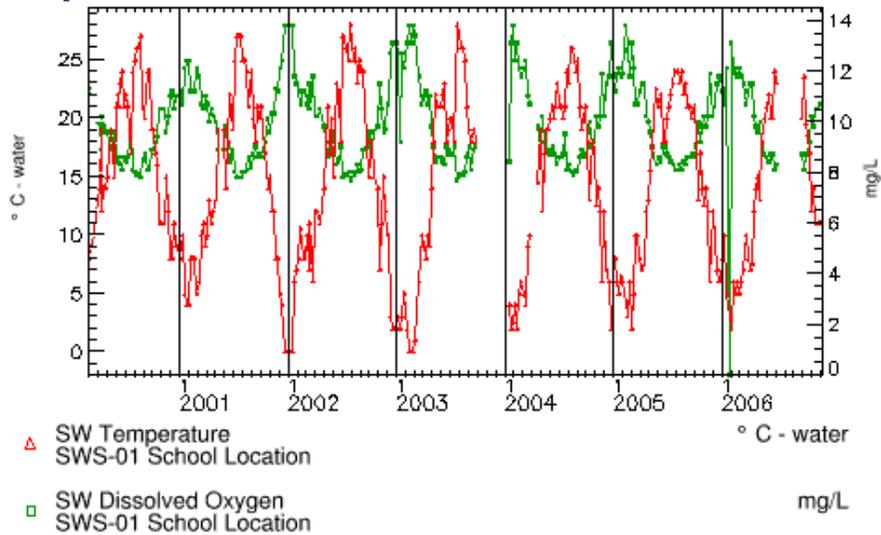


Using GLOBE Water Temperature and Dissolved Oxygen Data in the Classroom



Colegiul National Mircea cel Batran-Constanta, RO



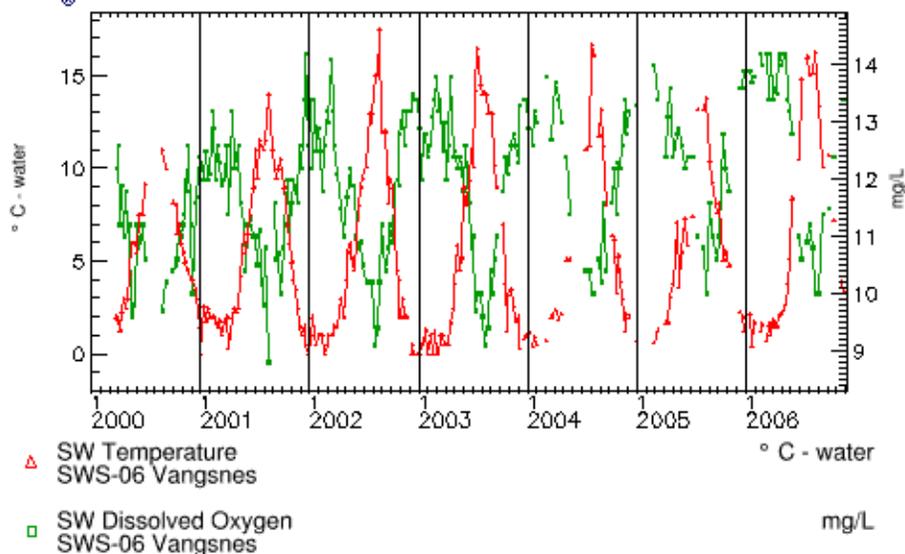
Colegiul National Mircea cel Batran, in Constanta, Romania

What is the relationship between water temperature and dissolved oxygen? This question can be answered by looking at graphs of data or, in order to understand why it exists, through a brief exploration of Henry's Law. Henry's Law, formulated by William Henry, is one of the gas laws. It states that at a constant temperature, the amount of a gas dissolved in a liquid is directly proportional to the partial pressure of that gas in equilibrium with that liquid. As a result, the solubility of gases generally decreases with increasing temperature. The decrease in the solubility of gases with increasing temperature is an example of the operation of Le Chatelier's principle. Therefore, we see that as the water temperature rises, the dissolved oxygen falls and vice versa. The graph above, from Colegiul National Mircea cel Batran, in Constanta, Romania, displays this inversely proportional relationship of water temperature and dissolved Oxygen.

However, if it is to truly apply scientifically, this relationship must occur elsewhere. As you can see from the following graph, from Vang barne- og ungdomsskule, in Valdres, Norway, it does apply elsewhere.

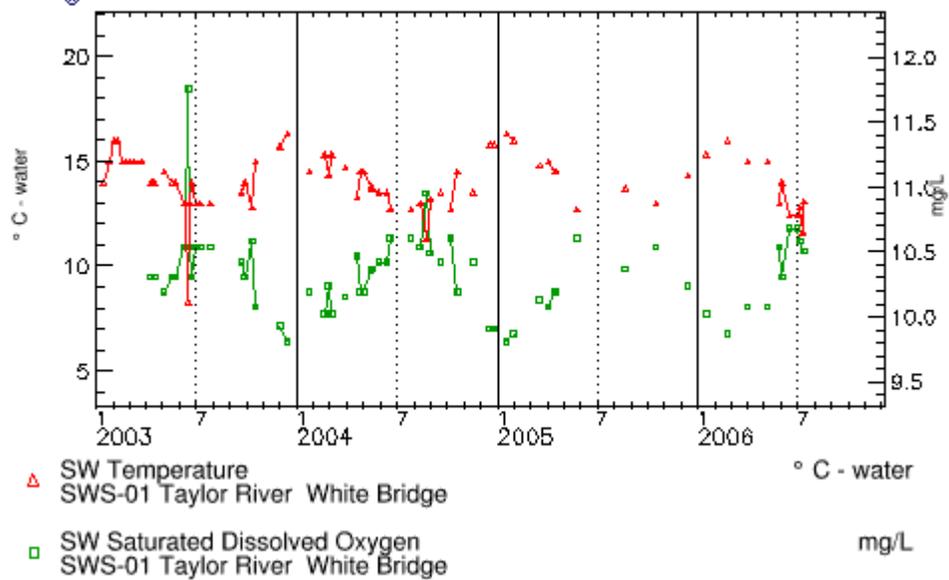


Vang barne- og ungdomsskule (6-16)-Valdres, NO





Marlborough Boys College-Blenheim, Nelso, NZ

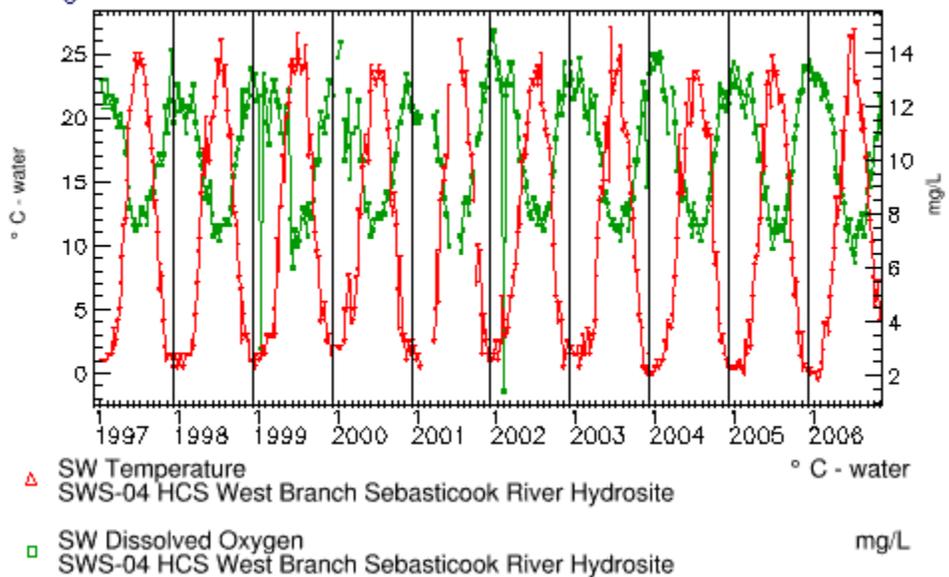


Marlborough Boys College, in Nelso, New Zealand

The effects of this principle can also be seen in the southern hemisphere: the high temperature and low dissolved oxygen occurs in December/January, as displayed in the graph above from Marlborough Boys College, in Nelso, New Zealand, while in the northern hemisphere the high temperature and low dissolved oxygen occurs in July/August, as displayed in the graph below from Hartland Consolidated School, in Hartland, Maine. This can segue into a discussion about seasonal temperature variation.



Hartland Consolidated School-Hartland, ME, US



Hartland Consolidated School, in Hartland, Maine

Science concepts are often difficult to comprehend strictly from text; therefore allowing students to see the graphs of water temperature and dissolved oxygen over time through the data they collect will help them to better understand what scientists of long ago, such as William Henry and Henry Louis Le Chatelier, discovered.