**Lesson Plan Summary for ‘Evaporation’**

1. **Summary**

Students explore evaporation as a critical component in the water balance. This assignment takes ~2-3 hours for students to complete.

**2 Learning Goals**

*Topical Goals*

* Learn about evaporation as a component in the water balance and the factors that influence the value of evaporation rate.
* Explore Fick’s first law, and learn to understand how the evaporation rate quantitatively changes under influence of vapor pressure difference, wind speed and fetch.
* Learn how the evaporation rate varies for different base surfaces, and make calculations for several base surfaces.

*Quantitative Skills Goals*

* Learn to quantify rates of change from a graph. Discusses proportionality and/or inverse proportionality.
* Use spreadsheets to plot data time series and make simple calculations, learn to draw trendlines, and how to use trendlines to quantify relationships between two variables.

**3 Context to use**

This activity is part of a set of hydrology spreadsheet labs to teach the ‘water balance model’. There are companying exercises for precipitation and infiltration.

This exercise works either when assigned as a problem set and can be completed individually. It encourages students to explore physical process of evaporation and using quantitative method to describe it. It can serve as a material for students in environmental sciences, geography and in introduction to hydrology/water engineering classes.

**4 Teaching Notes and Tips**

Question 2 can benefit from additional classroom discussion. It is optional to collectively calculate relative differences of the controlling input, and then calculate relative differences in the predicted evaporation.

5 **Assessment**

Grading includes checking for reasonable verbal explanations of different phenomena. The instructor can check students’ ability to make annotated graphs, to derive trendlines, and calculate a linear slope from a data time series.

It is important in the spreadsheet on the Fick’s equation, that students learn which factors influence the general evaporation rate and how they work. In evaluating the reports, we place greater emphasis on demonstration of a reasonable thought process than on arrival at the correct answer.