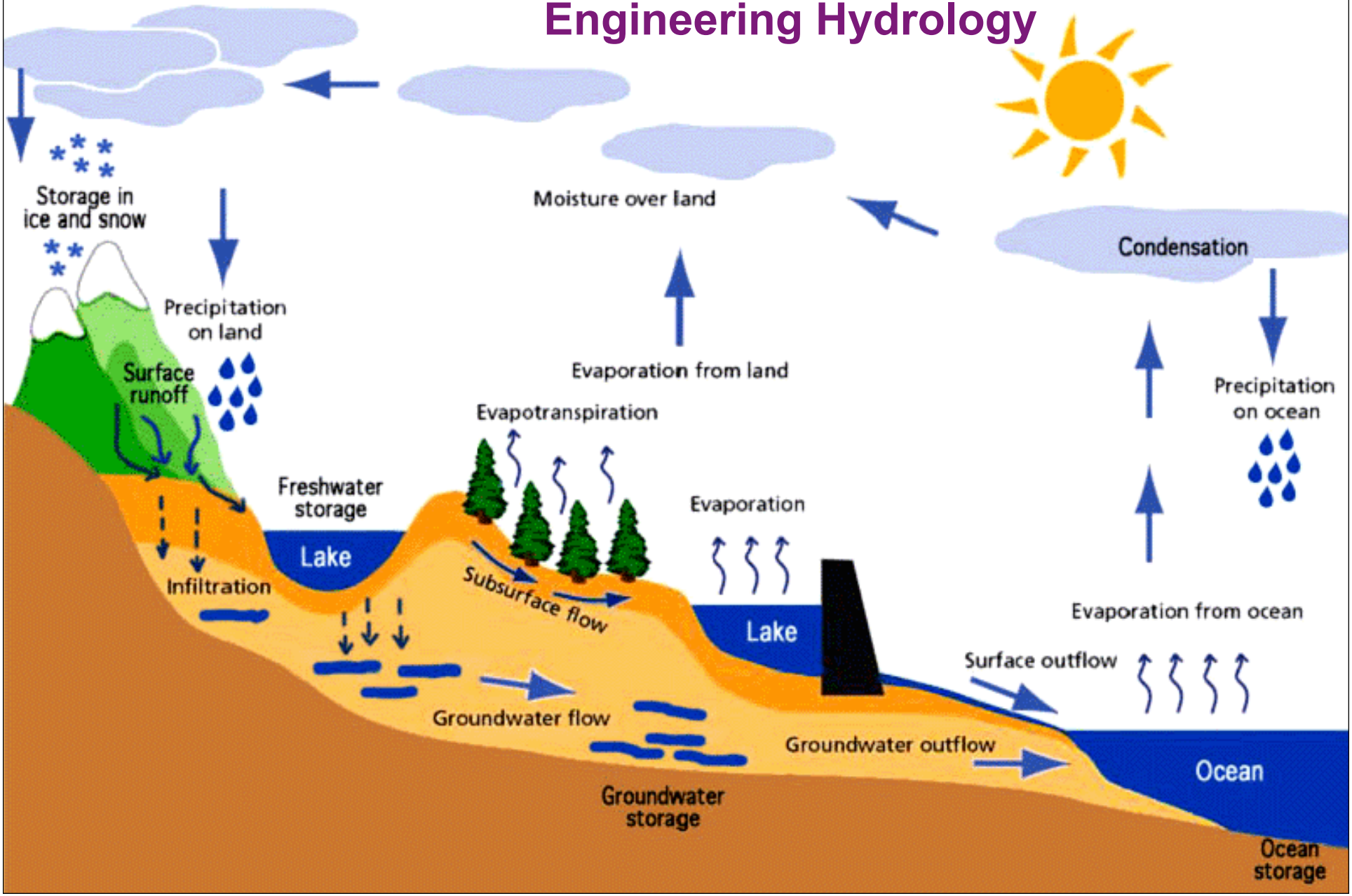
Engineering Hydrology



Dan will discuss the syllabus and overall course objectives for the semester!

For every class period, please read the assigned material, actively participate in the discussion, ask questions, review relevant example problems, and complete the assigned homework problems.

Today's objectives are for you to be able to:

- Define hydrology
- Consider hydrologic applications in civil engineering
- Describe the hydrologic cycle
- Define precipitation

Hydrology: study of water and its properties, distribution, and effects on the Earth's surface, soil, and atmosphere

Domain of hydrology includes the physical, chemical, and biological reactions of water in natural and man-made environments

Work in teams of two or three to identify specific examples of hydrology in civil engineering and highlight why it is important in that application. Be prepared to discuss one of your examples.

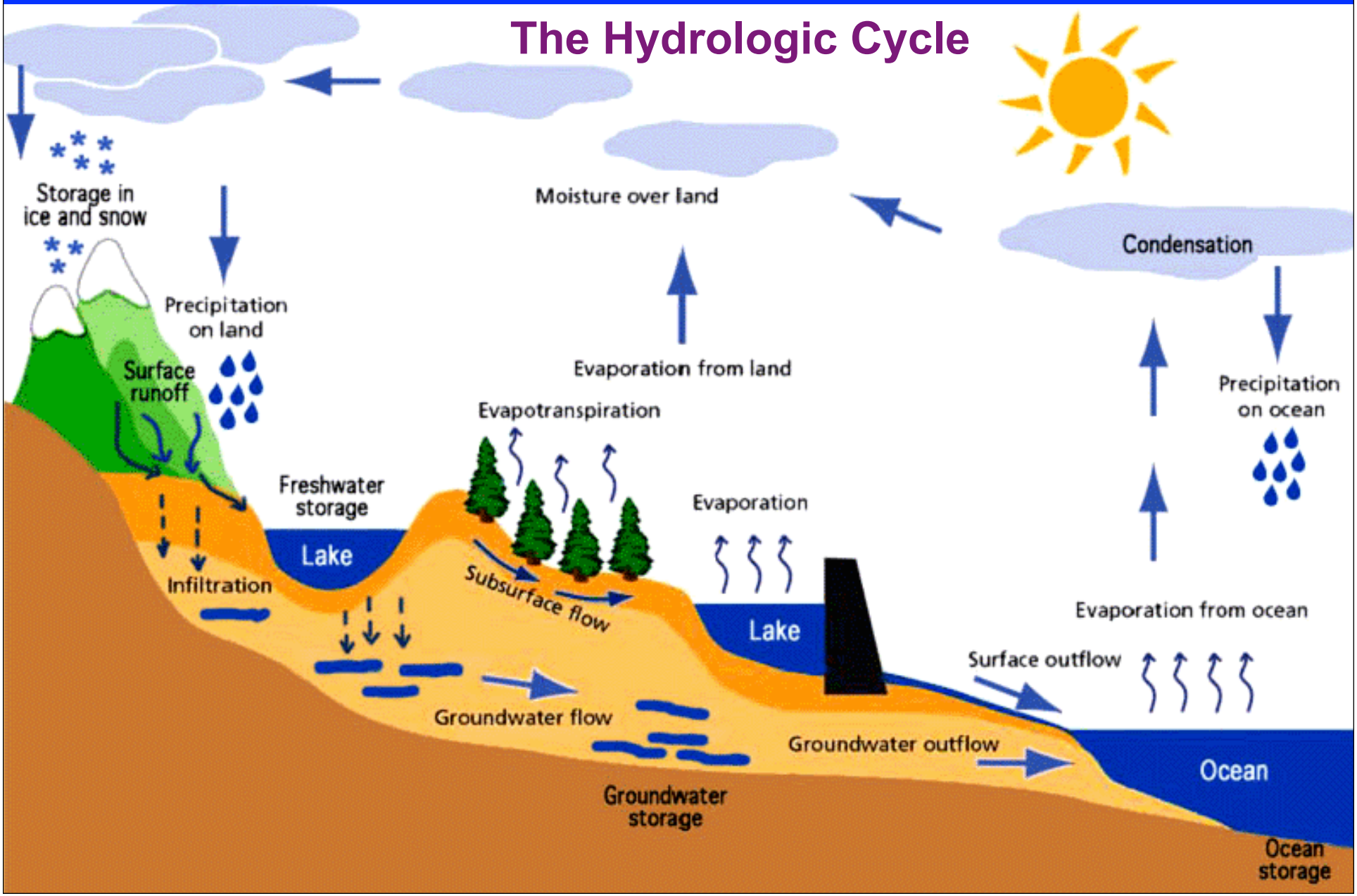
What is the importance of hydrologic engineering design?

- Hydrologic design provides a service
- Level of service must be defined and acceptable risk of failure must be determined (local drainage ordinances)
- Cost and site characteristics are typical constraints

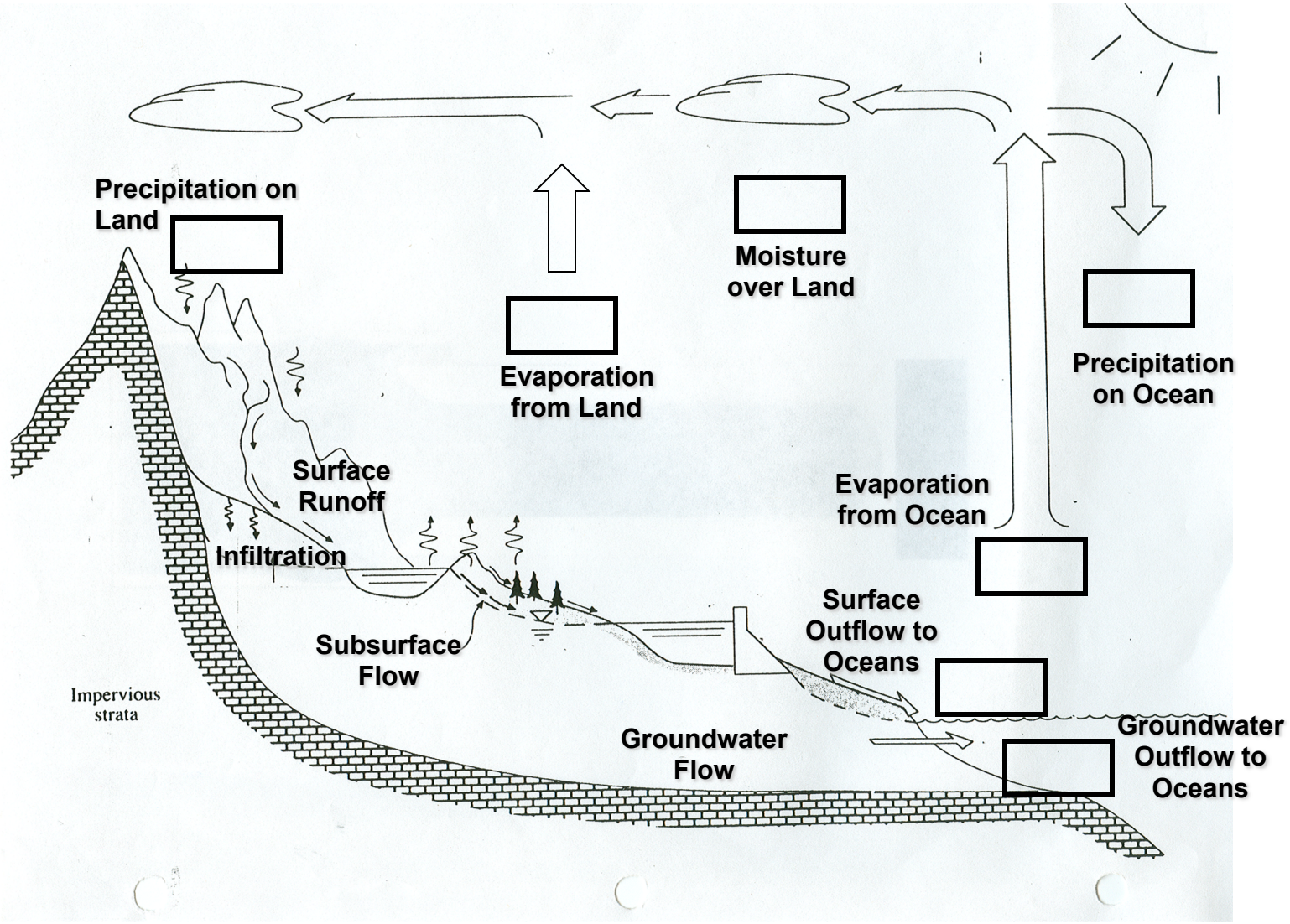
What is the importance of hydrologic engineering design?

- Occurrence, timing, and amount are the key aspects of hydrology from an engineering perspective…
- Problems are created by lack of water or too much water in a location at a moment in time (e.g., flood)

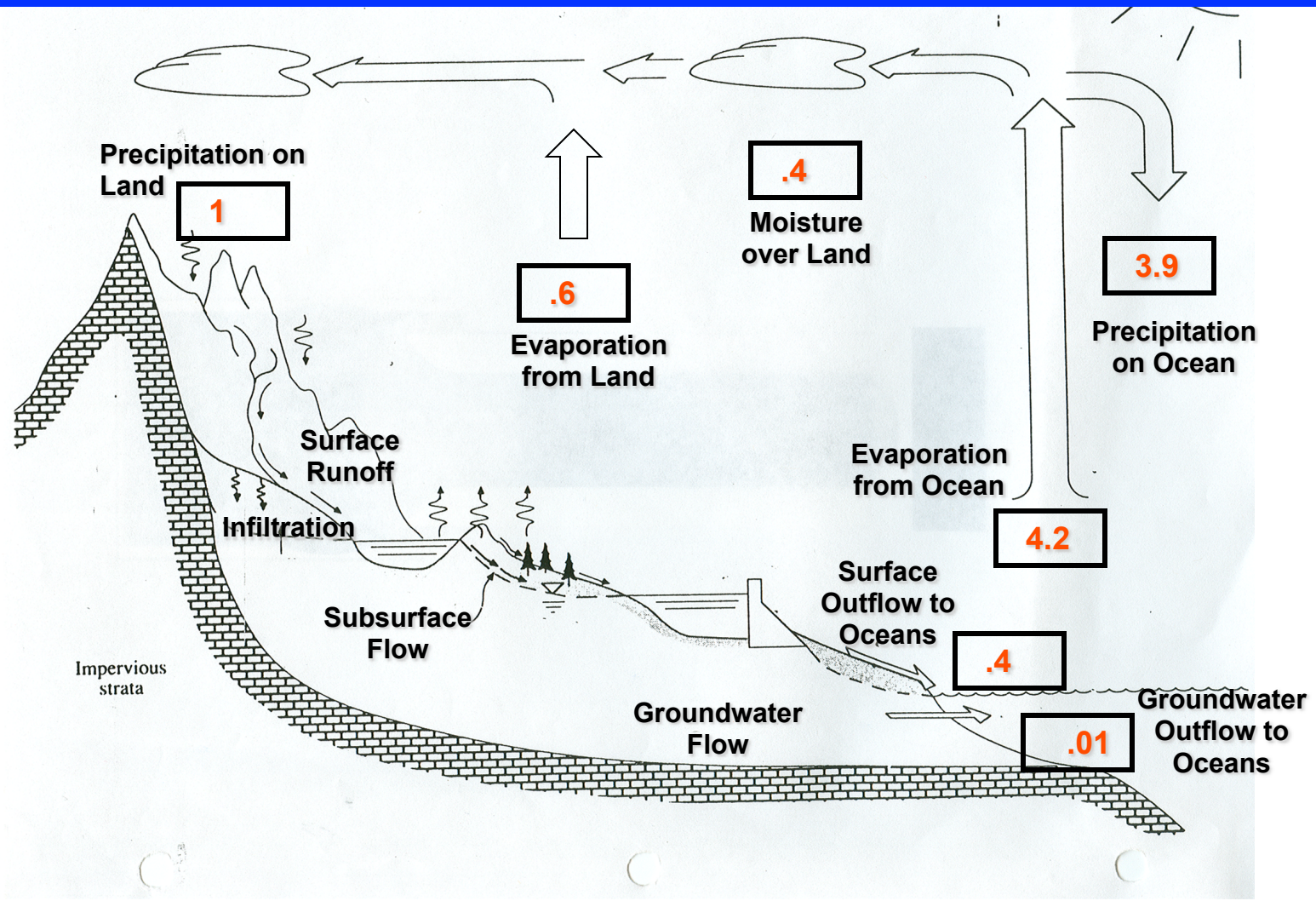
The Hydrologic Cycle



What are the components (stores and fluxes of water) of the hydrologic cycle?

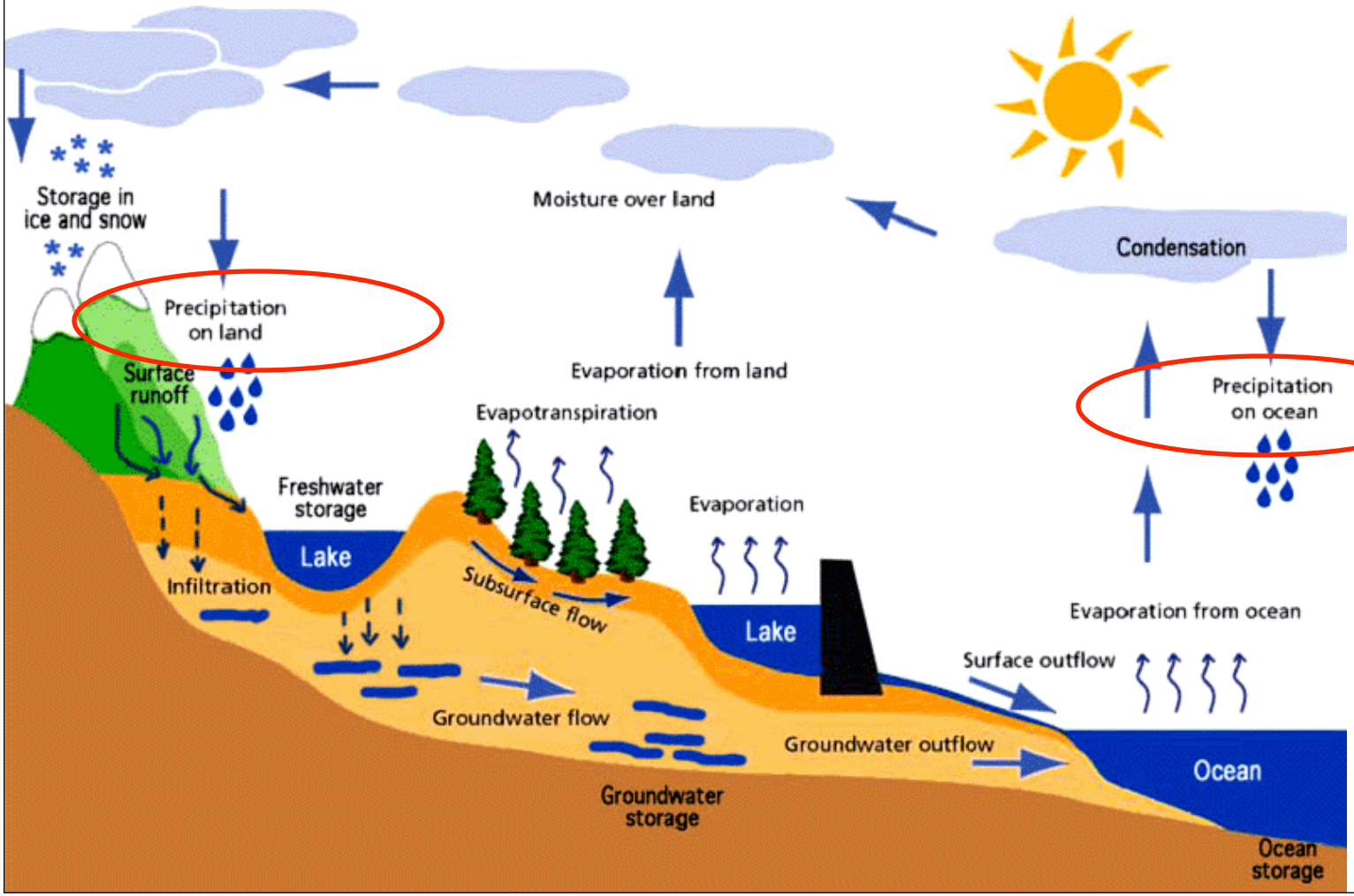


On a global scale, if precipitation on land is 1 unit, label the other quantities in the hydrologic cycle.



On a global scale, if precipitation is 100 units, label the other quantities in the hydrologic cycle.

Precipitation



Over the next couple weeks, we will briefly review each component of the hydrologic cycle.

We'll start with precipitation