

# Training Outline

## SEBAL and METRIC Expert Training

### Monday PM:

- Introductions
- Description of course
- Overview of SEBAL (background, overview, and objectives)
- Overview of the theory (surface radiation balance, surface energy budget, data requirements, intermediate and end products)
- Setting up the image (layering and choosing a subset image)
- Obtaining header file information
- Practice

### Tuesday AM:

- Review Mondays work
- Obtaining weather data, reference ET, and exploring the time issues around these quantities
- Practice

### Tuesday PM:

- Solving the surface radiation balance equation:
  1. Radiance (model\_01)
  2. Reflectivity (model\_02)
  3. Albedo – top of atmosphere (model\_03)
  4. Surface albedo (model\_04)
  5. Incoming shortwave radiation (calculator)
  6. Vegetation indices (model\_05)
  7. Surface emissivity (model\_06)
  8. Effective at-satellite temperature (model\_07)
  9. Surface temperature (model\_08)
  10. Outgoing longwave temperature (model\_09)
- Practice

### Wednesday AM:

- Review of Tuesdays work
- Theory behind using "anchor" pixels
- Selecting the "cold" pixel
- Selecting the "hot" pixel
- Practice

### Wednesday PM:

- Computing incoming longwave radiation (calculator)

- Computing the net surface radiation (model\_10)
- Solving the surface energy budget equation - computing  $G/R_n$  and  $G$  (model\_11)
- Look at results and practice

### **Thursday AM:**

- Review Wednesdays work
- Theory behind the method of computing sensible heat flux (temperature difference, wind speed, surface roughness, aerodynamic resistance to heat transport)
- Computation of the friction velocity and wind speed at 200 meters for the weather station
- Computation of the momentum roughness length (model\_12) – land use map
- Computation of initial friction velocity and aerodynamic resistance for each pixel (model\_13)
- Theory of the linear  $dT$  function and of the atmospheric stability correction (soap bubbles)

### **Thursday PM:**

- Iteration process to compute sensible heat flux – use of the spreadsheet
- Practice
- Computation of instantaneous ET (model\_25)
- Computation of 24-hour ET (model\_26)
- Computation of seasonal ET

### **Friday AM:**

- Review
- Questions
- Mountain Model (perhaps)
- Aster application (perhaps)
- Adjourn