GEOLOGIC OUTCROP MAPS: INTERPRETATIONS FROM DOWN-PLUNGE VIEWING AND CROSS SECTION

INSTRUCTIONS
Attached is a geologic outcrop map of 6 units. The outcrops represent the "known" (i.e. exposed) geology; intervening areas are covered. You are to complete the map and draw a cross section from A to A'. I recommend the following procedure:

1) Using colored pencils, color each rock unit at all the outcrops.

2) Draw in the contacts (dashed lines, in pen) through the covered areas and color lightly the units between outcrops.

3) Examine the map pattern and the attitudes of the cleavage, bedding and fold axes to deduce the structure. Look also at the asymmetry of the minor folds (S-, Z-, or M-shaped down plunge). Draw in the axial traces for the major folds, using the proper symbols. Be sure your axial trace symbols shows whether the folds are upright or overturned (consult your lecture notes, and see Compton, Appendix 7, symbol 33 vs. symbol 36).

4) Construct a cross section from A-A". Assume a flat topography. Use a vertical scale equal to the horizontal scale given on the map. Your section should extend to a depth of 3000 meters. Label the ends of the section (A, NW and A', SE) and show and label tick marks along the vertical axes every 500 meters. Continue all contacts above the line of section (as dashed lines) into the air to show the structures as they would look if not eroded. Try to incorporate the map pattern NE and SW of the line of section into the cross section. The method of down-plunge viewing is useful to visualize what your cross section should look like. The map pattern NE of the line of section will be what your cross section look like above the surface, and the pattern SE of the line of section is what it will look like below the surface. Color the cross section.

When you're finished you will be able to answer the following 3 questions:

A) What type of contact is there between the limestone unit and the other units? How is this contact different on either side of the thrust fault?

B) What is the sequence of events (geologic history) that is displayed by the map?

C) Is there anything anomalous about the offset on the fault with regard to your interpretation of the geologic history? Provide at least two explanations for how this offset was produced.

THIS IS DUE FRI., May 5, Before 5 PM

See me before then when you have questions; I don't expect you to be able to do this without some additional help.