- What improvements can be done in following years to make our models more accurate.
- It's not a question about how fast our computers can become but more about observations or quantum mechanics and chemistry. Do you see some ways of making a progress there?

Don't try to predict what commands do

- They didn't evolve that way
- Check Hazy1
- Then check the output
- To see that it did what you wanted

Species in Cloudy

- Hazy 1 Sec 2.5

Use the Cloudy yahoo group

- https://groups.yahoo.com/neo/groups/cloudy_simulations/info

Main output, print line xxx

Reading in a predicted spectrum

- **Save transmitted continuum**
- **table read "func_trans_punch.trn"**
- **Tsuite / auto**
  - func_trans_punch.in, func_trans_read.in

Line profiles

- **Post process line & continuum output**

Velocity fields

- **Default is static, with thermal broadening**
- **Turbulence can be added**
  - makes line optical depths smaller, so lines escape more easily, continuum florescent excitation more important
- **Wind - ballistic supersonic outflows**
- **~sonic flows**
- **Line transfer with "Large Velocity Gradient " (LVG) or "Sobolev approximation"**
  - 2 names for same thing

Fine and coarse continuum grids

Speed ups

- Hazy 1, Sec 19.17

The optimizer

- Hazy 1 Chap 17

Project poster

- One page landscape format PDF with results of the project
- One per group, to be posted on web site

Some closing thoughts

- **Quantitative spectroscopy - read the message in the starlight – what does the spectrum tells us?**
- **Like all fields, a steep learning curve, but the rewards will be great - be able to decipher the message**
  - Like medieval priests, an elevated position since only a few can read the sacred texts