# Observing Report Guidelines

Writing an observing report, like any lab report or project write-up[1], is as close to writing a research paper as you get in your degree. Therefore, consider these guiding principles for any report. Your report should:

1. Contain enough information to let someone **replicate** your results;

2. Convince the reader that your analysis is **careful** and **correct;**

3. **Compare** your results to the literature.

If you cannot do this from your report, re-write it. If some fact or detail is needed to meet these aims, include it! If a fact or detail doesn't help these aims, leave it out! Since your report is basically a little research paper, look at published papers to see what they include, and what they leave out.

## Observing report sections

The report is broken down into several sections. Specific advice for these sections is below.

### Planning

Make sure you answer these questions. What is the aim of your project? What criteria does a good target have? **Show** that your cluster meets these criteria. Be **quantitative**. By the end of the year you should be able to calculate the S/N you expect from your observations. Calculate the S/N expected at the main-sequence turn-off for your cluster. If you can, explain why it will be sufficient for your aims.

### Observations

Remember, we need to convince the reader our results are **reliable**. Describe **what** observations were taken and **how**. The reader will want to know what the observing conditions were like!

### Analysis

Describe how you went from individual images to a colour-magnitude diagram, and how you matched isochrones to the diagram. Think about what you would want to know to believe someone else's analysis was good.

Listing the steps taken is not enough. You have to describe how the steps were performed, including the steps someone else would need to take to get the same results as you. Note: this does **not** mean a step-by-step recipe, but it **does** mean giving the values used for vital settings in software.

---

[1] therefore, much of this advice is generally applicable to labs, or to reports later on in your degree.

Think about what plots or numbers you'd need in someone else's report to know they'd done the analysis properly. For example, how might you know their zero point was accurate?

Describe how you estimated uncertainties on your data if appropriate.

## Results

Describe how your data have been compared to theory or previous results. Again, bear in mind **replication** and **reliability**. Comparing results to the literature without using errors is **worthless**. What did you find? If you have surprising results, can you find an explanation for them?

## Presentation

Use clear, concise english.

Be precise and don't use vague language. For example, if I describe a star as 'faint', what does that mean? Being precise would be to give a magnitude.

Focus on **structure**. Don't put things in out of order.

Graphs should be **clear**. Don't use large points for data which obscure other points. Don't use colour and print in B&W. Show error bars if they are needed.

References should ideally be **primary** references. E.g for an age of a cluster, try and find an original research paper, don't just cite WEBDA. You can use the NASA ADS website to search the astronomical literature:

https://ui.adsabs.harvard.edu

## References

All statements of fact in a paper should be either:

1. Self evident;

2. Shown to be true in the text, or

3. **REFERENCED.**

If you state anything to be true without support, reference it!

## Peer Review

The best way of checking if your report meets these criteria is to get someone to review it for you. If you swap reports you will also find the act of checking someone else's report can help you see the deficiencies in your own. Don't forget to use the Rubric when peer reviewing!