“To industries and back”

(Post-graduate career opportunities
in science and industry)

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What do you want?

Be in a “cool” place?

Credit: ESO

Fascinated by space?

Credit: ESA

My experience

- Outside of research:
  - Software test engineer (SAP AG)
  - System engineer for the Columbus module of the International Space Station (GSOC/DLR)
- Doing research:
  - Max Planck Institute (PhD)
  - ESA (Postdoc/Scientist)
  - ESO (Scientist)

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Working for an astronomical observatory

Credit: ESO

Working for an astronomical observatory

Being an “astronomer” is not only writing research papers…

… but “duties” can be very different depending on where you work (university/research institute/space agency)

Working for an astronomical observatory

- Telescope/observatory operations
- Instrument scientist
- Archive scientist
- Public outreach
- …

Science operations

- Some of the “duties”:
  - Calibration of instruments
  - Planning/scheduling/execution of observations
  - User support (from proposal preparation to data analysis and delivery)
  - Expert data analysis/diagnostics of problems
  - Expert use of observatory (e.g. creating/exploiting ‘new’ observational modes)

Science operations

But… in order to do a good job in science operations
it is important to be an active researcher

(understand/anticipate needs/requests from users)

Science operations

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it is important to be an active researcher

(this doesn't mean writing 20 papers/year…!)

Science operations

The challenge is how to remain an active researcher when operational duties have always preference

Science operations

- Choosing where to work:

  - Percentage of time dedicated to “pure” research depends a lot on the organisation

    From 20% to 50% or more time available to research activities depending on position

    But also the way you ‘handle’ your tasks (e.g. automate some tasks) gives you more or less time for research.

Science operations

- Choosing where to work:
  - The environment:
    - Is it a scientific-driven organisation?
    - Geographic situation
    - Colleagues do research
    - Talks/seminars organised

Science operations

- Choosing where to work:
  - Support for your own research:
    - Attendance to conferences
    - Collaborations (visit other institutes or invite collaborators)
    - Attendance to other meetings or committees (e.g. peer reviews)
    - Scientific evaluation
    - Is it possible to have students?

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Science operations

- Choosing where to work:
  - Long-term projects:
    - Where is the money?

      E.g. radio, optical, X-rays

      Observatories in construction/planning

Don't be afraid of asking!

Science operations

- Choosing where to work:

  - If you are interested in science operations, try to do an internship/postdoc in some astronomical observatory (ESA, ESO are some examples but there are many other organisations operating telescopes/observatories!)

And remember…

- You will have both interesting & “boring” tasks wherever you go
- You will learn from every work experience
- It’s about finding out what you really enjoy doing… (it is not bad to quit something if you realise you don’t like it)
- It may be a long way till you find your “dream job” but it’s worth it