Innovations in Earth observation

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Developing Areas

- Unmanned Aerial Vehicles (UAVs) for small area surveys

- Greater number of satellite operators: investor funded start-ups alongside, but also being bought by, the large companies

- Sentinel missions as a long-term (can be relied upon) source of data

- Renewed focused on geostationary missions e.g., for SAR

- Lidars in space for observing the marine and terrestrial environment

- Increased spatial resolution of radar data i.e. 1 m

- Increased use of automated techniques for mass data processing / information extraction

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"In the best sales year, around 25,000 images were sold. The Landsat project has now exceeded that number in a single day. In fact, the 9 millionth image was distributed on September 1, 2012." (http://www.un-spider.org/news-and-events/news/usgs-over-9-million-downloads-free-landsat-data)

Landsat 8 data is ~1Gb in size while Sentinel-2 was ~7Gb in size [now being distributed as tiles, so smaller files to download]

Sentinel-2 MSI, ESA
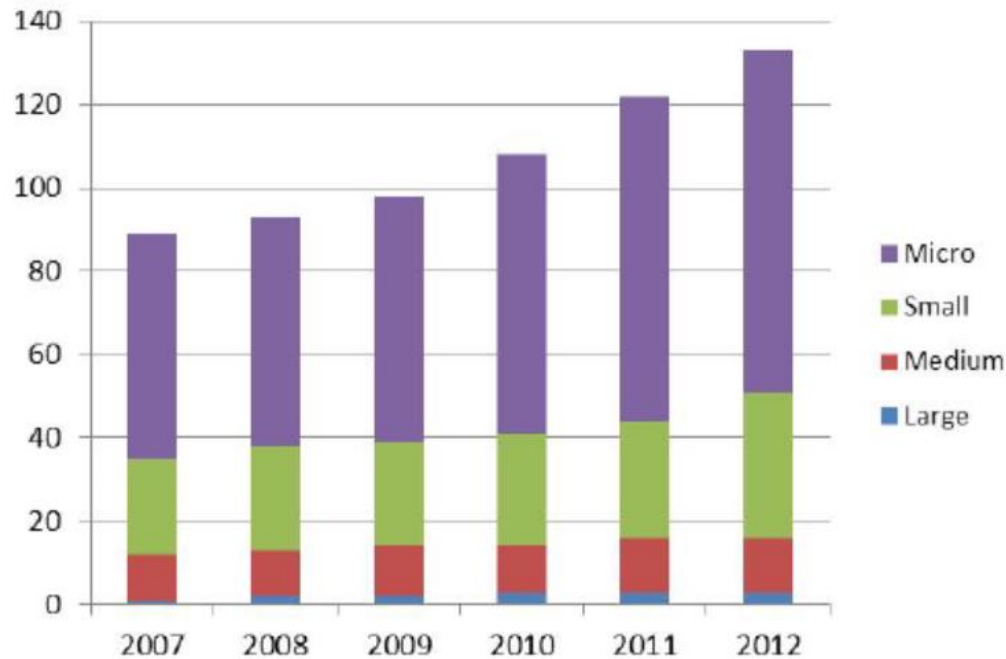
Landsat-8 OLI, USGS/NASA

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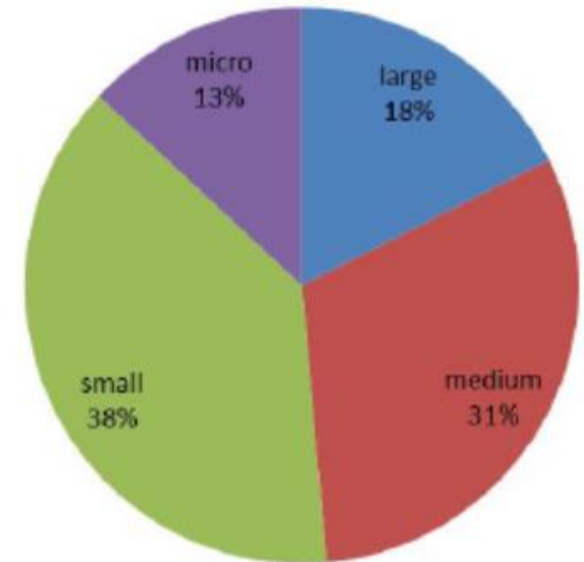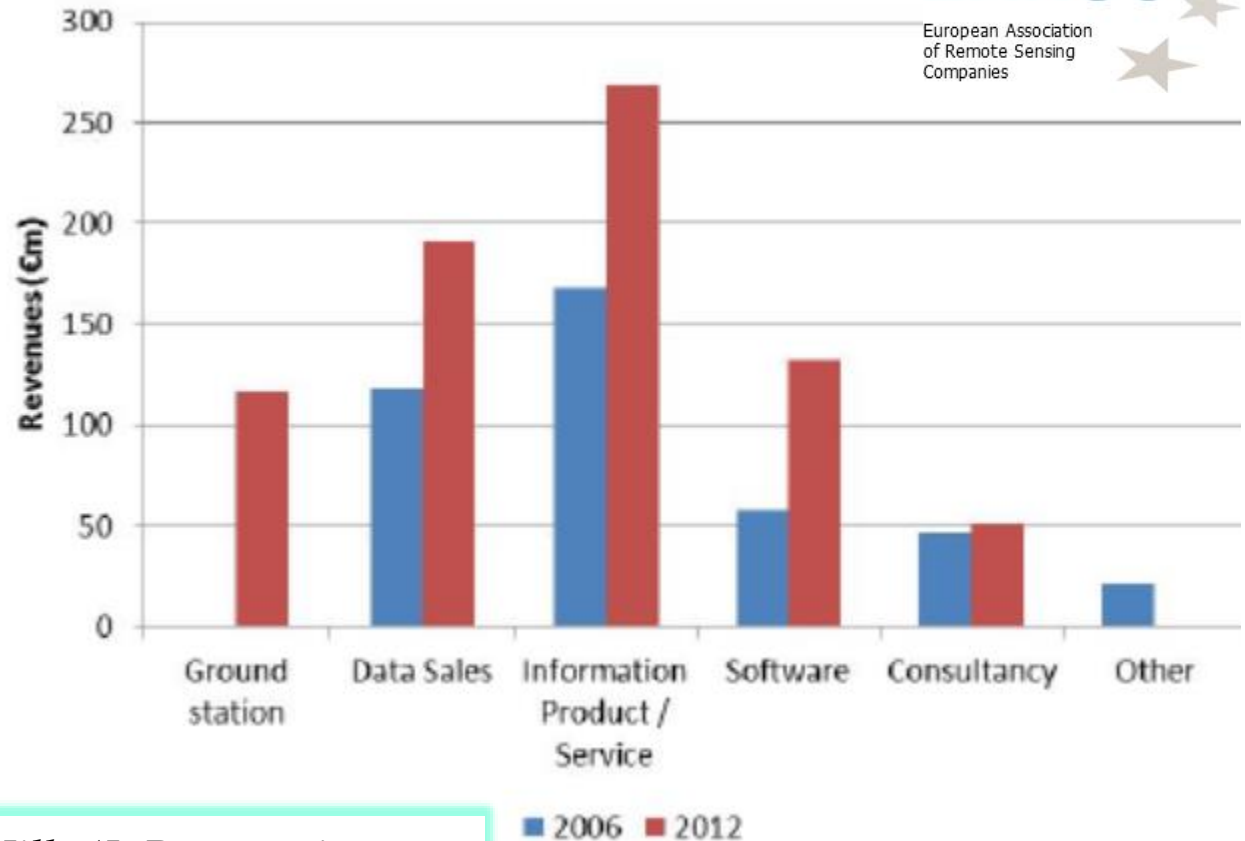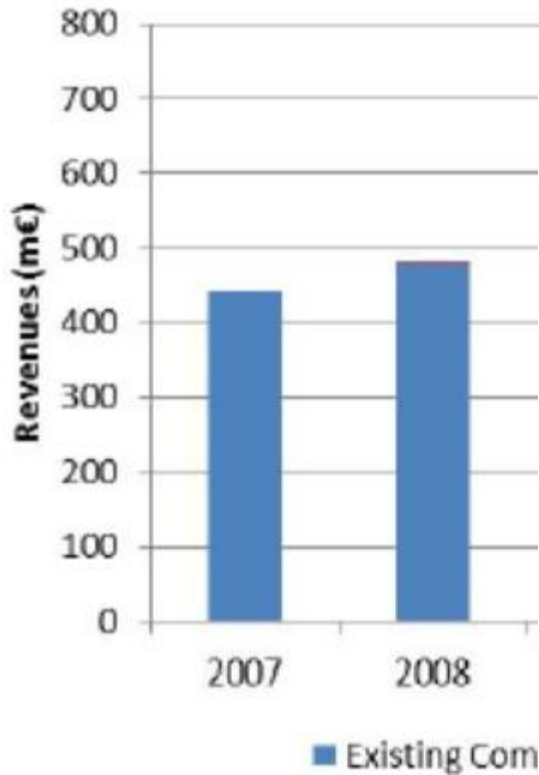
Chart 3-5: Classification of the total companies in the response

Chart 4-6: Distribution of Employees by Company Class

European Association of Remote Sensing Companies (EARSC) industry survey

EARSC
European Association
of Remote Sensing
Companies

Hayman & Giles, Seven Hills (IoD magazine, Jul/Aug 2015): Incumbents are always vulnerable; we live in a world where change is the only constant; and damage is the punishment for standing still.

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What can SMEs offer?

- Specialist knowledge and experience, not always readily available elsewhere

- Commercialisation of unique research that can open or extend markets for existing companies

- Complimentary knowledge and a "go to scientist" who understands and responds on business timescales

- More responsive as a partner because the chain of command for agreement / decisions is often shorter than with larger organisations

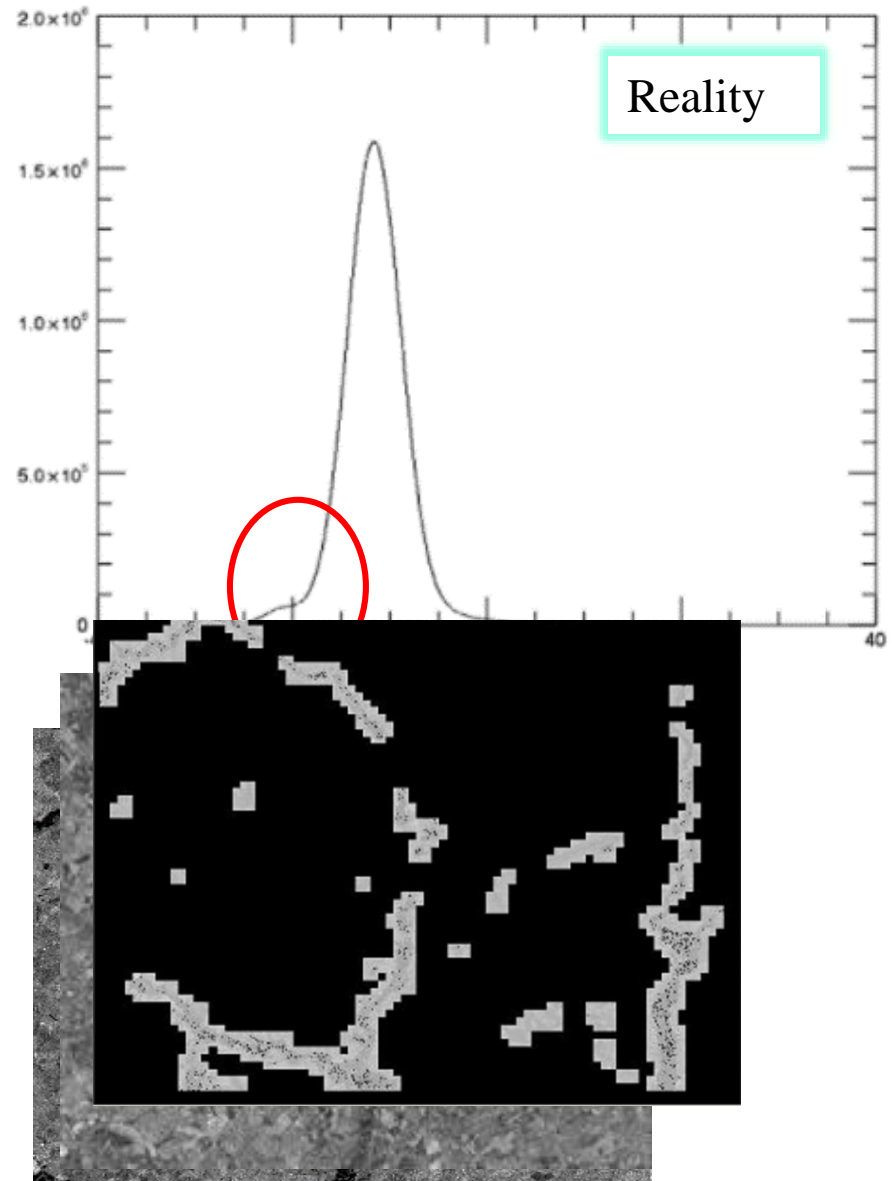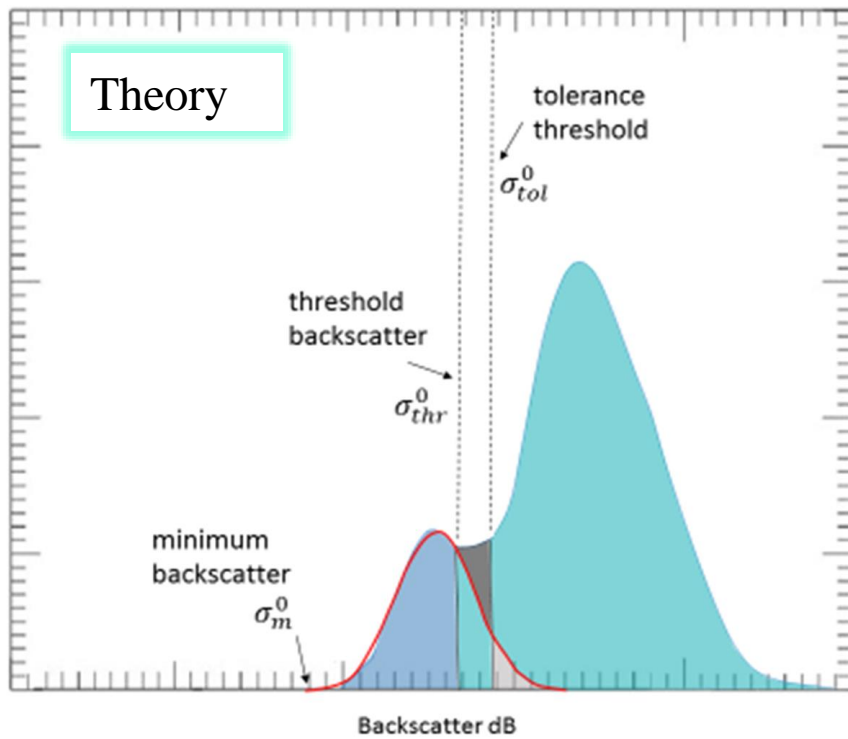**Pixalytics**

Computers have enough power to outperform people?

Every person has a relative strength.

Computers excel at data processing, but struggle with judgements.

Therefore, computers complement humans, empowering people. They're tools not rivals.

So we need hybrid approaches to problem solving: extracting information to human provide insight.

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Flood mapping with SAR, Sentinel-1 York example – Space for Smarter Government Programme project

Reality

Theory

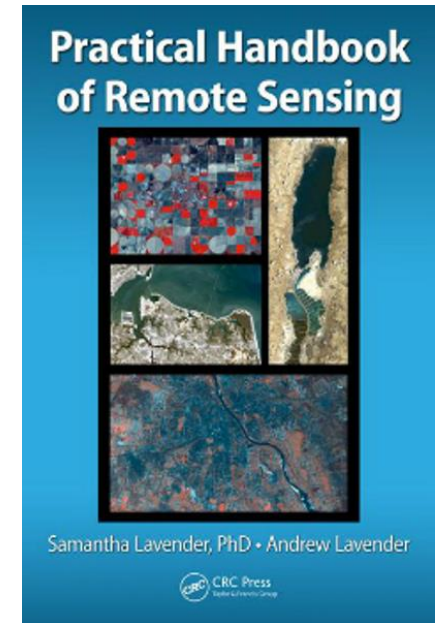Copernicus Sentinel data [2015] courtesy of the EC/ESA.

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Practical Handbook of Remote Sensing

Samantha Lavender, PhD • Andrew Lavender

CRC Press

Conclusions

- It's an exciting time to be in the field of remote sensing

- There's a wealth of data, and we need to explore what's possible

- It's important to understand what's needed, but also provide a vision to non-expert users as the technology can be confusing

- Growth is with smaller companies, but they need an ecosystem of universities and larger companies

- Collaboration is key: between people, organisations and with technology.

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Thank You

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