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| Last updated: | November 2023 |

**JOB DESCRIPTION**

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| Post title: | **Research Fellow in remote sensing of crops** | | |
| Academic Unit/Service: | School of Geography and Environment | | |
| Faculty: | Environment and Life Science | | |
| Career Pathway: | Education, Research and Enterprise (ERE) | Level: | 4 |
| \*ERE category: | Research focused | | |
| Posts responsible to: | Principal Investigator | | |
| Posts responsible for: |  | | |
| Post base: | Office-based (some field work) | | |

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| Job purpose |
| The post will work with principal investigator to undertake research on utilisation of Earth observation data in monitoring crop performance and production to support ongoing research projects. Specific activities would involve developing novel techniques to derive crop specific biophysical variables (e.g. Leaf Area Index, Fraction of Absorbed Photosynthetic Active Radiation and Canopy Chlorophyll Content), crop phenology and productivity at a continental scale from existing satellite sensors. Further activities would involve integrating these variables with crop models to improve crop yield prediction and detection of crop stress. |

| Key accountabilities/primary responsibilities | | % Time |
| --- | --- | --- |
|  | To process Earth observation (EO) data (primarily European Space Agency’s Sentinel Sensors) to generate dataset of crop biophysical variables and validate them with field observation. | 25 % |
|  | To develop space time data analysis techniques to derive information on crop phenology and productivity at selected study sites in Europe and Australia | 25% |
|  | To develop methods to integrate the EO derived crop variables with crop models and assess their performance. | 15% |
|  | To develop methods to evaluate the potential of using the EO based indicators to monitoring crop health | 15% |
|  | Regularly disseminate findings by taking the lead in preparing publication materials for referred journals, presenting results at conferences and project meetings. | 10 % |
|  | Carry out occasional undergraduate supervision, demonstrating or lecturing duties within own area of expertise, under the direct guidance of a member of departmental academic staff. | 5 % |
|  | Any other duties as allocated by the line manager following consultation with the post holder. | 5% |

| Internal and external relationships |
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| • Working closely with the Principal Investigator  • Actively engage with project partners |

| Special Requirements |
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| To be available to undertake fieldwork at sites either in Europe or Australia.  *Applications for Research Fellow positions will be considered from candidates who are working towards or nearing completion of a relevant PhD qualification. The title of Research Fellow will be applied upon successful completion of the PhD. Prior to the qualification being awarded the title of* ***Senior Research Assistant*** *will be given.* |

**PERSON SPECIFICATION**

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| Criteria | Essential | Desirable | How to be assessed |
| Qualifications, knowledge and experience | PhD (or equivalent professional qualifications and experience in Geography, Geomatics or a related discipline.  Detail understating of algorithms for Earth observation-based vegetation parameters.  Detailed understanding of methods to analyse time series of EO data to derive information on vegetation functioning.  Experience of using cloud-based data processing infrastructure/ high performance computing to handle large dataset | Knowledge of operational crop model(s)  Experience of radiative transfer model in Earth observation  Experience of undertaking fieldwork for ground data collection of vegetation biophysical variables. | CV,  publications, references, interview |
| Planning and organising | Ability to conduct research both independently and in collaboration with peers  Able to organise own research activities to deadline and quality standards |  | CV,  publications, references, interview |
| Problem solving and initiative | Able to develop understanding of complex problems and apply in-depth knowledge to address them  Able to develop original techniques/methods  Experience with Image processing software, Programming and Statistical analysis |  | CV,  publications, references, interview |
| Management and teamwork | Experience with collaborative work  Work effectively in a team, understanding the strengths and weaknesses of others to help teamwork development |  | CV,  publications, references, interview |
| Communicating and influencing | Able to present research results at group meetings and conferences  Able to write up research results for publication in leading peer-viewed journals  Work proactively with colleagues in other work areas/institutions, contributing specialist knowledge to achieve outcomes |  | CV,  publications, references, interview |
| Other skills and behaviours | Understanding of relevant Health & Safety issues  Positive attitude to colleagues and students |  | references, interview |
| Special requirements | Able to attend national and international conferences to present research results |  | interview |

**JOB HAZARD ANALYSIS**

**Is this an office-based post?**

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| Yes | If this post is an office-based job with routine office hazards (eg: use of VDU), no further information needs to be supplied. Do not complete the section below. |
| No | If this post is not office-based or has some hazards other than routine office (eg: more than use of VDU) please complete the analysis below.  Hiring managers are asked to complete this section as accurately as possible to ensure the safety of the post-holder. |

## - HR will send a full PEHQ to all applicants for this position. Please note, if full health clearance is required for a role, this will apply to all individuals, including existing members of staff.

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| **ENVIRONMENTAL EXPOSURES** | **Occasionally**  (<30% of time) | **Frequently**  (30-60% of time) | **Constantly**  (> 60% of time) |
| Outside work |  |  |  |
| Extremes of temperature (eg: fridge/ furnace) |  |  |  |
| ## Potential for exposure to body fluids |  |  |  |
| ## Noise (greater than 80 dba - 8 hrs twa) |  |  |  |
| ## Exposure to hazardous substances (eg: solvents, liquids, dust, fumes, biohazards). Specify below: |  |  |  |
| Frequent hand washing |  |  |  |
| Ionising radiation |  |  |  |
| **EQUIPMENT/TOOLS/MACHINES USED** | | | |
| ## Food handling |  |  |  |
| ## Driving university vehicles(eg: car/van/LGV/PCV) |  |  |  |
| ## Use of latex gloves (prohibited unless specific clinical necessity) |  |  |  |
| ## Vibrating tools (eg: strimmers, hammer drill, lawnmowers) |  |  |  |
| **PHYSICAL ABILITIES** | | | |
| Load manual handling |  |  |  |
| Repetitive crouching/kneeling/stooping |  |  |  |
| Repetitive pulling/pushing |  |  |  |
| Repetitive lifting |  |  |  |
| Standing for prolonged periods |  |  |  |
| Repetitive climbing (ie: steps, stools, ladders, stairs) |  |  |  |
| Fine motor grips (eg: pipetting) |  |  |  |
| Gross motor grips |  |  |  |
| Repetitive reaching below shoulder height |  |  |  |
| Repetitive reaching at shoulder height |  |  |  |
| Repetitive reaching above shoulder height |  |  |  |
| **PSYCHOSOCIAL ISSUES** | | | |
| Face to face contact with public |  |  |  |
| Lone working |  |  |  |
| ## Shift work/night work/on call duties |  |  |  |