FWO DMP Template

Project supervisors (from application round 2018 onwards) and fellows (from application round 2020 onwards) will, upon being awarded their project or fellowship, be invited to develop their answers to the data management related questions into a DMP. The FWO expects a **completed DMP no later than 6 months after the official start date** of the project or fellowship. The DMP should not be submitted to FWO but to the research co-ordination office of the host institute; FWO may request the DMP in a random check.

At the end of the project, the **final version of the DMP** has to be added to the final report of the project; this should be submitted to FWO by the supervisor-spokesperson through FWO's e-portal. This DMP may of course have been updated since its first version. The DMP is an element in the final evaluation of the project by the relevant expert panel. Both the DMP submitted within the first 6 months after the start date and the final DMP may use this template.

1. General Information	
Name applicant	**Brecht Bamps**
FWO Project Number & Title	**1S23522N - ASSESSING AND PREDICTING THE IMPACTS OF EXTREME WEATHER ON VIGOUR AND PRODUCTIVITY OF APPLE AND PEAR ORCHARDS IN FLANDERS**
Affiliation	☒ KU Leuven ☐ Universiteit Antwerpen ☐ Universiteit Gent ☐ Universiteit Hasselt ☐ Vrije Universiteit Brussel ☐ Other:
2. Data description	
Will you generate/collect new data and/or make use of existing data?	☒ Generate new data ☒ Reuse existing data
Describe the origin, type and format of the data (per dataset) and its (estimated) volume	**WP1 -** The hazard of periods of drought and heat: to determine characteristics, spatial distribution and

*If you **reuse** existing data, specify the **source** of these data.*
*Distinguish data **types** (the kind of content) from data **formats** (the technical format).*

return periods of damaging episodes of drought and heat in the past (1971-2021) and future (1971-2021) under multiple climate scenarios.

Input data

Dataset name	Origin of data	Type of data	File format	Volume (estimated)
Meteorological data: historical observations for Belgium	Historical gridded meteorological datasets provided by the Royal Meteorological Institute(5x5km spatial resolution)	numerical	netcdf	5GB
Meteorological data: future projections under different climate scenario's (RCP4.5 and RCP 8.5) for Belgium	CORDEX product	numerical	netcdf	200GB

Output data

Dataset name	Origin of data	Type of data	File format	Volume (estimated)
Drought and heat related metrics and related return periods	Meteorological data: historical and future projections	numerical	csv	20MB

WP2 - Damage assessment and impact modelling

Input data

Dataset name	Origin of data	Type of data	File format	Volume (estimated)
Orchard ground reference data	Survey with questions on orchard characteristics and yearly yields at the	survey, numerical, categorical	csv	20MB

	parcel level			
Historical damage datasets (since 2017)	Retrieved via the Flemish Disaster Fund (Rampenfonds)	numerical	csv	<5MB
Earth observation data for time series analysis	Landsat 8, Sentinel 1, Sentinel 2 available through Google Earth Engine (GEE)	image, metrics extracted from GEE on a per parcel basis as numerical	tiff, csv	10MB per year (for csv extracts)
DHM Vlaanderen II (1m)	Geopunt	image	tiff	120GB
Digitale Bodemkaart van België	Geopunt	iumerical and categorical	shapefile	2 GB

Output data

Dataset name	Origin of data	Type of data	File format	Volume (estimated)
Impact maps for drought and heat for all pear parcels in Flanders	Output from biophysical crop model Cropsyst	numerical	shapefile, csv	1GB
Damage assessment maps for historical period (2015-present)	Output from damage assessment models	numerical	shapefile, csv	50MB

WP3 - Future impacts: application of the models developed in WP2 for future climatic conditions, identified in WP1

Input data

Dataset name	Origin of data	Type of data	File format	Volume (estimated)
Drought and heat related metrics and related return periods	Output from WP1	Numerical	csv	1GB

Output data

Dataset name	Origin of data	Type of data	File format	Volume (estimated)
Future impact maps for drought and heat for all pear parcels in Flanders	Application of models delevoped in WP2 on future climatic conditions as identified in WP1	numerical, derived	shapefile, csv	10GB

WP4 - Crop insurance: systematic literature review on currently available crop insurance product for the fruit sector

Input data

Dataset name	Origin of data	Type of data	File format	Volume (estimated)
Literature metadata	Result from search in multiple academic search engines (Web Of Science, Scopus, Google Scholar…) or grey literature	numerical, categorical	csv	1GB
Literature full texts	Downloaded from academic search engines or retrieved directly from authors	full texts	pdf	5GB

Output data

Dataset name	Origin of data	Type of data	File format	Volume (estimated)
Metrics extracted from the literature that was retained for the systematic literature review	Extracted from identified relevant literature	numerical	csv	10MB

3. Ethical and legal issues	
Will you use personal data? If so, shortly describe the kind of personal data you will use AND add the reference to your file in your host institution's privacy register. *In case your host institution does not (yet) have a privacy register, a reference is not yet required of course; please add the reference once the privacy register is in place in your host institution.*	☒ Yes ☐ No If yes: - Privacy Registry Reference: G-2021-3366-R2(MIN) - Short description of the kind of personal data that will be used: • Agricultural data on parcel level: ○ Yield quantity (ton/ha) ○ Yield quality (size class distribution) ○ Relevant management practices ○ Past (potentially) damaging events ○ Information on insurances • Identification data: ○ Name + surname ○ Company name ○ Email address ○ Telephone number
Are there any ethical issues concerning the creation and/or use of the data (e.g. experiments on humans or animals, dual use)? If so, add the reference to the formal approval by the relevant ethical review committee(s).	☒ Yes ☐ No If yes: - Reference to ethical committee approval: G-2021-3366-R2(MIN)
Does your work possibly result in research data with potential for tech transfer and valorisation? Will IP restrictions be claimed for the data you created? If so, for what data and which restrictions will be asserted?	☐ Yes ☒ No If yes, please comment:

Do existing 3rd party agreements restrict dissemination or exploitation of the data you (re)use? If so, to what data do they relate and what restrictions are in place?	☐ Yes ☒ No If yes, please comment:

4. Documentation and metadata	
What documentation will be provided to enable understanding and reuse of the data collected/generated in this project?	An overview of generated output and associated metadata will be provided per work package including information on the used input datasets. An overview of the used scripts (R and Python) will be included.
Will a metadata standard be used? If so, describe in detail which standard will be used. If not, state in detail which metadata will be created to make the data easy/easier to find and reuse.	☐ Yes ☒ No If yes, please specify: **Input data:** text file containing overview of the used datasets, including version number, date of download or access, explanation of the variables and units used. **Output data:** text file containing data of creation, author information, brief overview of the contents of the output, reference to the scripts that were used to generate the output. **Scripts:** text file containing data of creation, author name, author email address, brief overview of the content of the script and the output it generates, information on the software version that was used.

5. Data storage & backup during the FWO project	
Where will the data be stored?	During the research period, a time-stamped master copy of all data (including metadata) will be stored on KU Leuven's secure cloud storage system “Onedrive for Business". The large storage space of the server of the Division Forest, Nature and Landscape can be used to store large volumes of geospatial data.
How will the data be backed up?	These data storage platforms are backed-up on a regular basis by the Department of Earth and Environmental Sciences’ IT-services. Moreover backups of scripts and processed data will be made on external hard drives on a monthly basis.

Is there currently sufficient storage & backup capacity during the project? If yes, specify concisely. If no or insufficient storage or backup capacities are available, then explain how this will be taken care of.	☒ Yes ☐ No If no, please specify: Enough cloud storage is available. Moreover, large geospatial datasets are planned to be accessed through cloud-computing, making downloading and storing of many of these voluminous datasets unnecessary.
What are the expected costs for data storage and backup during the project? How will these costs be covered? *Although FWO has no earmarked budget at its disposal to support correct research data management, FWO allows for part of* ***the allocated project budget*** *to be used to cover the cost incurred.*	The data storage volumes for cloud storage provided by the Department will suffice. Additional offline backups will be done on (relatively low cost) external hard drives (estimated to cost €400 for 10TB).
Data security: how will you ensure that the data are securely stored and not accessed or modified by unauthorized persons?	Sensitive personal data is saved using the multifactor authentication tool from the KU Leuven (KU Leuven Authenticator).

6. Data preservation after the end of the FWO project FWO expects that data generated during the project are retained for a period of minimally 5 years after the end of the project, in as far as legal and contractual agreements allow.	
Which data will be retained for the expected 5 year period after the end of the project? In case only a selection of the data can/will be preserved, clearly state the reasons for this (legal or contractual restrictions, physical preservation issues, ...).	All data created during this research project will be retained for the expected 5 year period besides the personal data of the farmers that link their personal information to specific farmers.
Where will these data be archived (= stored for the long term)?	After the research period, the data will be stored on the university's central servers (with automatic back-up procedures) for at least five years, in conformity with the KU Leuven RDM (Research Data Management) policy.

What are the expected costs for data preservation during these 5 years? How will the costs be covered? *Although FWO has no earmarked budget at its disposal to support correct research data management, FWO allows for part of **the allocated project budget** to be used to cover the cost incurred.*	There are no additional costs expected for the foreseen 5 year preservation period.

7. Data sharing and reuse	
Are there any factors restricting or preventing the sharing of (some of) the data (e.g. as defined in an agreement with a 3rd party, legal restrictions)?	☒ Yes ☐ No If yes, please specify: personal data of the farmers that link their personal information to specific parcels cannot be shared with third parties and will be destroyed at the end of the FWO project.
Which data will be made available after the end of the project?	All created output on damage and impact assessment of drought and heat episodes on pear orchards will be made available, including scripts.
Where/how will the data be made available for reuse?	☐ In an Open Access repository ☐ In a restricted access repository ☒ Upon request by mail ☐ Other (specify):
When will the data be made available?	Upon publication of the research results
Who will be able to access the data and under what conditions?	The data will be available to anyone for any purpose, provided that they give appropriate credit to the creators.
What are the expected costs for data sharing? How will these costs be covered? *Although FWO has no earmarked budget at its disposal to support correct research data management, FWO allows for part of **the allocated project budget** to be used to cover the cost incurred.*	There are no expected costs related to data sharing.

8. Responsibilities	
Who will be responsible for the data documentation & metadata?	**The PhD researcher**
Who will be responsible for data storage & back up during the project?	**The PhD researcher**
Who will be responsible for ensuring data preservation and sharing?	**The PhD researcher**
Who bears the end responsibility for updating & implementing this DMP? *Default response: The PI bears the overall responsibility for updating & implementing this DMP*	**The promotors**