DATA FOR CLIMATE ACTION

CHALLENGE
APPLICATION GUIDE

GLOBAL PULSE

IN COLLABORATION WITH

Western Digital

skoll global threats fund

A call to channel big data to address one of the word's biggest challenges.

Ready to bring your big ideas?

The Data for Climate Action Challenge is an unprecedented open innovation challenge to channel data science and big data from companies to fight climate change.

Data scientists, researchers, and innovators around the world are invited to apply to participate at DataforClimateAction.org.

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ABOUT THE CHALLENGE

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As we go about our daily lives — making calls, buying goods, and posting on social media — we generate enormous amounts of data. When this privacy-protected data is aggregated and analyzed, it can show how, where, and why people and communities take specific actions as they deal with a changing world.

The Data for Climate Action Challenge invites data scientists, researchers, and innovators to dive into this treasure trove of information and channel data science to combat one of the biggest challenges facing us today — climate change.

Designed to support Sustainable Development Goal #13: Climate Action, this Challenge aims to catalyze research and development in the areas of climate mitigation, climate adaptation, and the linkages between climate change and the broader 2030 Agenda adopted by world leaders in 2015. Ultimately, the Challenge seeks to generate novel solutions — ranging from original research papers to new applications and tools — that could inform more responsive local policies and programmes around the world, and that collectively demonstrate how data-driven innovation can transform efforts to combat global climate change.

A number of companies across a variety of industries are participating in the Challenge and will offer selected participants access to data. These companies are advancing "data philanthropy," a growing movement whereby private companies share their data to advance the public good. In addition, applicants may also request tools to support their research in their applications.

Final project submissions will be reviewed by a committee of evaluators with expertise in climate change and/or data science. Selected participants will be informed in October for a November award ceremony.

CHALLENGE PHASES

March to April 2017:
Application Period

Individuals and teams will submit research proposals for innovative climate solutions by 17 April 2017.

April to May 2017:
Selection Period

Approximately 100 participants (individuals or teams) will be selected as semi-finalists to be notified in May 2017.

May to September 2017:
Research Period

Selected researchers will be notified and introduced to relevant resource contributors to gain access to data and/or technology and use it for the purposes of implementing their submissions as per the Terms & Conditions. Final projects must be submitted in September 2017.

September to October 2017:
Evaluation Period

Final project submissions will be reviewed by a committee of evaluators with expertise in climate change and/or data science. Selected applications will be informed no later than 31 October 2017, for a November Award Ceremony.

WHY PARTICIPATE?

Climate change is a global problem, affecting countries and communities around the world. It threatens livelihoods, homes, and entire ecosystems and cultures — and these effects will only worsen with time. Just as climate change affects all of us, our collective talents and abilities are needed to address it.

Big data is already transforming business and society. Imagine if we could use it to address the effects of climate change.

The Challenge aims to demonstrate the transformative power of data-driven innovation, mobilizing business leaders and the data science community to generate new approaches to climate action and sustainable development. It presents a great opportunity for participants to explore company data and conduct groundbreaking research.

The projects developed through the Challenge will add to a growing body of examples of the shared value of big data and public-private cooperation for climate action and sustainable development.

When possible, and at the sole discretion of UN Global Pulse, the Challenge will also aim to connect research teams with relevant field practitioners in order to facilitate pilot projects and operational solutions.

YOUR CHANCE TO HELP ADVANCE THE SUSTAINABLE DEVELOPMENT GOALS

At a historic UN summit in September 2015, 17 Sustainable Development Goals (SDGs) — comprising the 2030 Agenda for Sustainable Development — were adopted by world leaders. To achieve these goals, the global community will work to end all forms of poverty, fight inequalities, and tackle climate change, while ensuring that no one is left behind. This Challenge aims to advance SDG #13: Climate Action.

Read more about the SDGs.

WHAT CAN BIG DATA DO FOR CLIMATE ACTION?

In both the public and private sectors, managers rely on timely, accurate, and comprehensive data to identify emerging risks and opportunities and to make operational and investment decisions.

Climate action is no different. While traditional sources of climate data can describe how the climate is changing, they do not always illuminate what solutions would be most effective in reducing greenhouse gas emissions and building community resilience.

New sources of big data from different industries and geographies can be applied to construct a more complete picture, and can enhance our understanding of the dynamic relationship between human behavior and the climate system.

Big data can complement traditional data sources in two main ways:

MONITORING AND IMPACT EVALUATION
Big data can reveal the effectiveness of current efforts to mitigate and adapt to climate change, and the impacts that climate change is already having on communities.

For example, aggregated mobile data has been used to understand the mobility patterns of people affected by floods. This research yielded insights that could improve disaster relief management and infrastructure planning.

DEVELOPMENT OF NEW SOLUTIONS
Big data can generate insights to help identify novel approaches to climate mitigation and adaptation. For example, aggregated mobile data has been used to measure urban traffic congestion. Transportation companies and policymakers can use such insights to improve fleet management and transit planning, reducing emissions while better serving their communities.

RESEARCH THEMES & EXAMPLE APPLICATIONS

RESEARCH THEMES & EXAMPLE APPLICATIONS

The Challenge is organized around three major themes, which align with climate action and global development priorities. The hypothetical example projects below can be used as inspiration for your application.

CLIMATE MITIGATION

Energy

Example Project: As energy efficiency increases or the mix of energy sources shifts, comments in social media may reflect these changes. Researchers participating in the Challenge could examine perceptions of energy cost, access, and quality stated publicly through social media.

Transportation

Example Project: Researchers participating in the Challenge could analyze mobility patterns to reveal how to optimize public transit so that it better serves congested areas and reaches communities in need that may currently be unconnected.

CLIMATE ADAPTATION

Agriculture & Food Security

Example Project: Researchers could assess the impacts of extreme temperatures on crops, by examining data from weather sensors together with publicly available data.

Community Resilience

Example Project: Researchers could examine how movement patterns in communities shift before, during, and after a certain climate shock (such as a drought, hurricane, or flooding). This information could help to understand the infrastructural impacts of the shock and to target relief efforts.

CLIMATE & OTHER SUSTAINABLE DEVELOPMENT GOALS

No Poverty

Example Project: Examining how mobility patterns in different districts shift before, during, and after extreme weather events could reveal the differential impacts of disasters on communities with low and high average incomes.

Good Health & Well-Being

Example Project: 1) Air quality measurements and 2) reports of respiratory health problems, as expressed on social media, could be related to either data or social media commentary regarding the deployment of renewable energy.

Reduced Inequalities

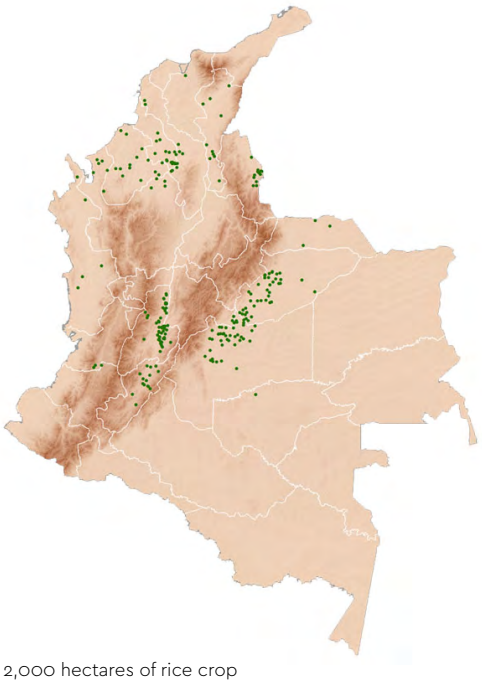
Example Project: Retail or financial data could be used to reveal how different segments of society prepare for and recover from climate shocks, and could reveal differences in how they are impacted in the long term.

INSPIRATIONS

SUPPORTING COLOMBIAN RICE FARMERS

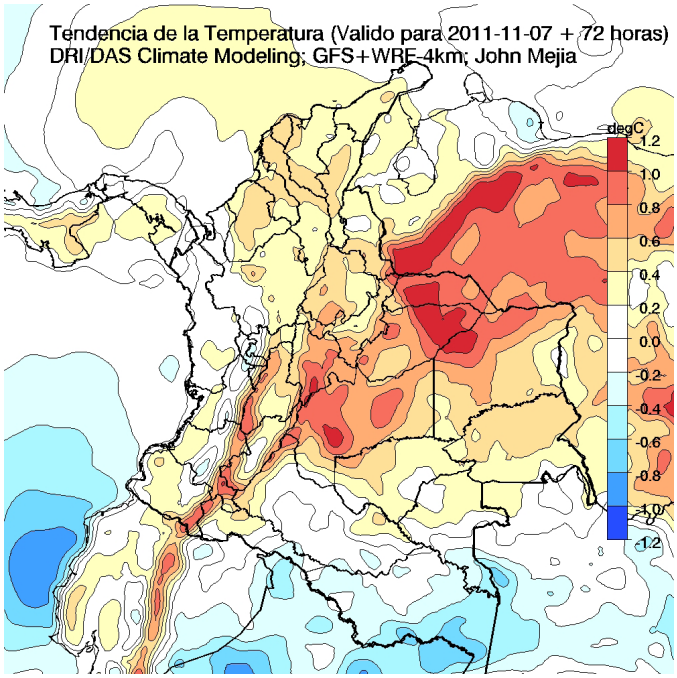
In 2013, a group of scientists based at the International Center for Tropical Agriculture (CIAT) used historical data to build a model that successfully predicted a 2014 drought. By sharing this prediction and advising farmers not to plant for the first of the two annual growing seasons, they were able to save 170 rice farmers from losses that would have amounted to USD 3.6 million. Using 10 years of historical weather and rice crop data, the model made predictions by matching climate patterns with annual rice yields. This allowed scientists to create a variety of scenarios, one of which led to the drought prediction. For Colombian rice farmers, who typically face an average 40–50 percent range of harvest variation based on weather, the model offers a new approach to farming that is more predictable and stable.

LEARN MORE AT: CCAFS.CGIAR.ORG



1 dot = 2,000 hectares of rice crop

Source: http://ricepedia.org/colombia

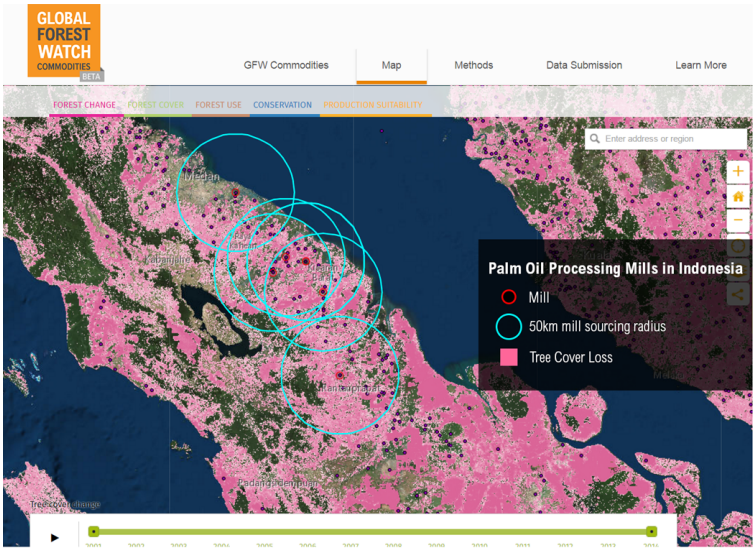


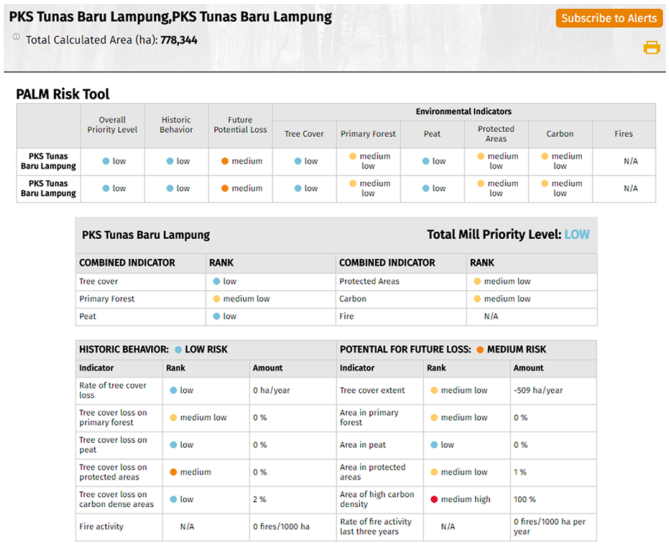
Source: http://www.lahistoriaconmapas.com

CONSERVING GLOBAL FORESTS

This robust tool combines data from more than 100 public and private sources to offer near real-time monitoring of global forest health. Combining both environmental and human impact datasets, Global Forest Watch's comprehensive dashboard not only informs conservation efforts but also serves as a valuable resource for commodity producers aiming to reduce their impact. The tool is being rapidly expanded and is increasingly used for decision-making by public and private organizations alike, enabling more responsible forestry and more accurate impact assessment. Examples of how this open source tool has been used to support decision-making include the PALM Risk Tool (which helps identify deforestation in the palm oil supply chain) and the Forest Watcher app, which puts forest data into the hands of local conservationists and officials. These officials can even document forest change and illegal activities from the ground, to upload later to the cloud.

LEARN MORE AT: GLOBALFORESTWATCH.ORG





PKS Tunas Baru Lampung,PKS Tunas Baru Lampung — Subscribe to Alerts

Total Calculated Area (ha): **778,344**

PALM Risk Tool

	Overall Priority Level	Historic Behavior	Future Potential Loss	Environmental Indicators: Tree Cover	Primary Forest	Peat	Protected Areas	Carbon	Fires
PKS Tunas Baru Lampung	low	low	medium	low	medium low	low	medium low	medium low	N/A
PKS Tunas Baru Lampung	low	low	medium	low	medium low	low	medium low	medium low	N/A

PKS Tunas Baru Lampung — **Total Mill Priority Level: LOW**

COMBINED INDICATOR	RANK	COMBINED INDICATOR	RANK
Tree cover	low	Protected Areas	medium low
Primary Forest	medium low	Carbon	medium low
Peat	low	Fire	N/A

HISTORIC BEHAVIOR: LOW RISK

Indicator	Rank	Amount
Rate of tree cover loss	low	0 ha/year
Tree cover loss on primary forest	medium low	0 %
Tree cover loss on peat	low	0 %
Tree cover loss on protected areas	medium	0 %
Tree cover loss on carbon dense areas	low	2 %
Fire activity	N/A	0 fires/1000 ha

POTENTIAL FOR FUTURE LOSS: MEDIUM RISK

Indicator	Rank	Amount
Tree cover extent	medium low	-509 ha/year
Area in primary forest	medium low	0 %
Area in peat	low	0 %
Area in protected areas	medium low	1 %
Area of high carbon density	medium high	100 %
Rate of fire activity last three years	N/A	0 fires/1000 ha per year

WORLD RESOURCES INSTITUTE

Sample map and PALM Risk Tool analysis report. **LEARN MORE: bit.ly/PALMRiskTool**

Source: http://www.globalforestwatch.org

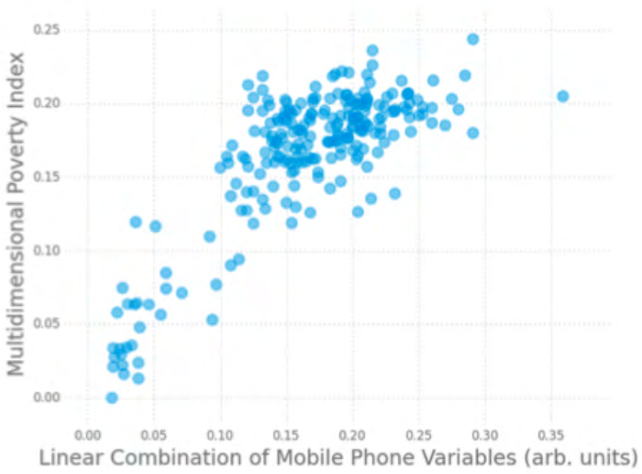
USING MOBILE PHONE DATA AND AIRTIME CREDIT PURCHASES TO ESTIMATE FOOD SECURITY

This study — conducted by UN Global Pulse together with the UN World Food Programme (WFP), Université Catholique de Louvain in Belgium, and Real Impact Analytics — found that airtime credit purchases could serve as a proxy for food security in market-dependent households in an East African country. Data extracted from airtime credit purchases (or "top-ups") and mobile phone activity in an East African country was compared to a nationwide household survey conducted by WFP at the same time. The researchers found very high correlations between airtime credit purchases and survey results referring to consumption of several food items, such as vitamin-rich vegetables, meat, or cereals. These findings suggest that airtime credit purchases could potentially be used for real-time updates on food security, which could potentially be integrated with early warning and monitoring systems.

LEARN MORE AT: UNGLOBALPULSE.ORG

FOOD ITEM (VARIABLE)	CORRELATION RANGE
Vitamin-rich vegetables (carrot, orange, sweet potato), rice, wheat, bread, sugar, meat	[0.7–0.8]
Eggs, oil, milk, butter, organ meat	[0.5–0.6]
Sorghum, ground nuts, seeds, fish, fruits, cooking banana, green leafy vegetables, beans, peas, maize, white roots, tubers, pumpkin, squash, cassava	[0.0–0.4]
White sweet potato	-0.4

The table above shows the correlation between consumption of foods and the sum of airtime credit purchases.



Source: http://www.unglobalpulse.org/projects/mobile-CDRs-food-security

APPLICATION TEMPLATE

APPLICATION FORM

Contact Information

Please provide your contact information.

This information will be used for communications related to your participation in Data for Climate Action.

* 1. Name

Given (first):

Family (last):

* 2. Primary email address

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APPLICATION FORM

Profile Information

Personal Information

This information may be used to report aggregate-level statistics.

* 3. Gender

* 4. Country

Location where you are primarily based.

* 5. Sector

- ◯ Academic
- ◯ Public sector
- ◯ For-profit
- ◯ Non-profit
- ◯ None/I do not wish to indicate
- ◯ Other (please specify)

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APPLICATION FORM

Organization Information

Please tell us more about your organizational affiliation.

If you do not wish to indicate any organizational affiliation, go back and select "None/I do not wish to indicate" in Question 5.

* 6. Institution

Name:

Link to website:

* 7. Position

Including any title, department, or general description of your role or affiliation.

* 8. Will your company/organization be providing any formal support for your participation in the Challenge?

For example, funding, staff, computing power, office space, etc.

- ◯ Yes
- ◯ No

If yes, please briefly describe the nature of anticipated support:

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APPLICATION FORM

Individuals or teams may apply to participate in the Data for Climate Action challenge. Please indicate which kind of application you are submitting.

*Note that Applicants are required to indicate that they have read and accept the **Terms of Participation** of the Challenge at the end of the application form. Applicants who are applying on behalf of their team will be accepting the **Terms of Participation** on behalf of their team.*

* 9. Are you applying as an individual or on behalf of a team?

- ◯ Individual
- ◯ Team

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APPLICATION FORM

Project Proposal

Please provide a brief description of your proposed project, including objectives and methods, requested datasets, and the potential impact of your work.

* 10. Proposed title of project

* 11. Please describe your research question, hypothesis, or the objective of your proposal.

What is the purpose of your project? What would you like to study, evaluate, develop, design, or implement?

*Only the first **150** words will be considered.*

* 12. Data for Climate Action theme(s) relevant to your proposal:

Please only select themes significantly addressed by your proposal. You may select multiple themes.

- [ ] Climate Mitigation: Energy
- [ ] Climate Mitigation: Transportation
- [ ] Climate Mitigation: Other
- [ ] Climate Adaptation: Food & Agriculture
- [ ] Climate Adaptation: Community Resilience
- [ ] Climate Adaptation: Other
- [ ] Climate & Other SDGs: Zero Poverty
- [ ] Climate & Other SDGs: Good Health & Wellbeing
- [ ] Climate & Other SDGs: Reducing Inequality
- [ ] Climate & Other SDGs: Other

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* 13. Challenge datasets requested:

Please see the dataset descriptions available on the Data for Climate Action website. If not specified, you may request a geographic or temporal scope for a dataset. In this case, please refer to the next question.

- ☐ BBVA Data & Analytics
- ☐ Crimson Hexagon
- ☐ Earth Networks
- ☐ Orange (Senegal)
- ☐ Orange (France)
- ☐ Orange (Morocco)
- ☐ Nielsen
- ☐ Planet
- ☐ Plume Labs
- ☐ Schneider Electric
- ☐ Waze

14. Please specify the desired scope of datasets requested, if applicable:

Including geographic, temporal, and other scope parameters: for example, "Paris, France, from May-June 2015" " or "50 square km around Dakar, Senegal, from 2014 to 2015."

Crimson Hexagon:	
Earth Networks:	
Planet:	
Plume Labs:	
Schneider Electric:	
Waze:	

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APPLICATION FORM

Project Proposal (continued)

* 15. Please describe the motivation behind your project and its potential impact.

What motivates you or your team to develop this project proposal? What potential impacts do you expect to result from your project? For example: it could advance the state of the art in your scientific field; it could support data-driven policy making; or it could help scale certain solutions. Please be as concrete as possible.

*Only the first **250** words will be considered.*

* 16. Please briefly describe your proposed methodology and research design.

What techniques and analytical approaches do you plan to use? What steps do you plan to take to reach your objectives? For example, you could include an explanation of how the requested datasets would contribute to addressing your research question and/or to devising an original solution to a problem relevant to climate change. You may also define a list of research priorities or benchmarks.

*Only the first **250** words will be considered.*

* 17. Please describe any privacy or ethical considerations that may result from your project and how you expect your team to address them.

For example, any protocols and/or processes you intend to use to ensure privacy and responsible analysis of data. For more information, please refer to the "Privacy and Data Protection Principles" developed by UN Global Pulse.

*Only the first **250** words will be considered.*

* 18. Expected type of final research submission

- ◯ Research paper or poster
- ◯ Application or tool

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19. Keywords

Please use semicolons to separate keywords.

* 20. Please indicate the total number of person-days that you and your team plan to spend collectively on your research project:

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APPLICATION FORM

Project Proposal (continued)

* 21. Do you plan to leverage (or would you be interested in leveraging) a cloud computing environment or data visualization platform for your proposed research for the duration of the Challenge?

- ◯ Yes
- ◯ No

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APPLICATION FORM

Project Proposal (continued)

* 22. Would you like your application to be considered for a temporary license for data visualization software and support from Tableau (Tableau Desktop Professional)?

- ◯ Yes
- ◯ No

* 23. Would you like your application to be considered for cloud computing support from Microsoft Azure for Research?

- ◯ Yes
- ◯ No

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APPLICATION FORM

Project Proposal (continued)

24. Please indicate any additional open and public datasets you plan to use:

If applicable, please list and provide a link to the datasets. If not applicable, leave blank.

25. Please indicate any additional proprietary or other datasets you plan to use:

If applicable, please describe the datasets and their sources (e.g., internal operational business data, or data collected using sensors by your company). If not applicable, leave blank.

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APPLICATION FORM

Background and Skills

Please tell us about your team's general academic and professional background as it applies to your proposed research.

* 26. Please enter your team's experience in each of the areas of expertise listed below:

For each option, please select the highest level of experience gained by any individual member of your team, or "None / Not Relevant" if not relevant.

	None / Not Relevant	Beginner	Intermediate	Advanced	Expert
Earth and Environmental Sciences	◯	◯	◯	◯	◯
Mathematics and Statistics	◯	◯	◯	◯	◯
Engineering	◯	◯	◯	◯	◯
Computer Science and Information Technologies	◯	◯	◯	◯	◯
Data Science	◯	◯	◯	◯	◯
Policy and/or Social Sciences	◯	◯	◯	◯	◯

Other (please specify area of expertise and experience)

* 27. Does any member of your team have prior experience working on climate-related projects, particularly in areas that are similar or relevant to your research proposal?

This could include academic or industry projects regarding climate mitigation, adaptation, and resilience.

◯ Yes

◯ No

If yes, please provide a brief description and links (one per line) to any content you consider relevant (e.g., peer-reviewed research papers, published results, blogs, code, etc.):

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* 28. Does any member of your team have prior experience with public policy design or analysis, including program monitoring and evaluation, particularly in areas that are similar or relevant to your research proposal?

- ◯ Yes
- ◯ No

If yes, please provide a brief description and links (one per line) to any content you consider relevant (e.g., peer-reviewed research papers, published results, blogs, code, etc.):

* 29. Has any member of your team published any papers or developed any applications, demos, or visualizations that demonstrate your ability to conduct the research described in your proposal?

- ◯ Yes
- ◯ No

If yes, please provide a brief description and links (one per line) to any content you consider relevant (e.g., peer-reviewed research papers, published results, blogs, code, etc.):

* 30. Please indicate your team's experience in communicating research:

For each option, please select the highest level of experience gained by any individual member of your team, or "None / Not Relevant" if not relevant.

	None / Not Relevant	Beginner	Intermediate	Advanced	Expert
Academic / Scientific writing	◯	◯	◯	◯	◯
Policy analysis	◯	◯	◯	◯	◯
Data visualization	◯	◯	◯	◯	◯
Dashboard / Application development	◯	◯	◯	◯	◯

Other (please specify skill and experience)

* 31. Please specify which tools your team typically uses for developing visualisations:

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APPLICATION FORM

Background and Skills (continued)

Please tell us more about your team's knowledge and skills in the field of data science as they apply to your proposed research.

* 32. Please indicate your team's experience in the field of computer science:

For each option, please select the highest level of experience gained by any individual member of your team, or "None / Not Relevant" if not relevant.

	None / Not Relevant	Beginner	Intermediate	Advanced	Expert
Programming	◯	◯	◯	◯	◯
Software engineering	◯	◯	◯	◯	◯
System administration	◯	◯	◯	◯	◯
Database management	◯	◯	◯	◯	◯
Managing structured data (e.g., parsing, cleaning, joining, etc.)	◯	◯	◯	◯	◯
Managing unstructured data (e.g., parsing, cleaning, joining, etc.)	◯	◯	◯	◯	◯
Big data and distributed data processing frameworks	◯	◯	◯	◯	◯
Managing or developing cloud-based infrastructures (e.g., Azure, Google Cloud)	◯	◯	◯	◯	◯
Scientific computing	◯	◯	◯	◯	◯

* 33. Does any member of your team have prior experience working with big data or on data-intensive projects, particularly ones that are similar or relevant to your research proposal?

◯ Yes

◯ No

If yes, please provide links to GitHub or other similar repositories, and links to any content you consider relevant (e.g., peer-reviewed research, published results, blogs, code, etc.) (one per line):

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* 34. Please specify which tools/frameworks your team typically uses to analyze big data:

If none, write "N/A"

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APPLICATION FORM

Background and Skills (continued)

* 35. Please indicate your team's knowledge and skills in the field of data science as they relate to your proposed research:

For each option, please select the highest level of experience gained by any individual member of your team, or "None / Not Relevant" if not relevant.

	None / Not Relevant	Beginner	Intermediate	Advanced	Expert
Information extraction using Natural Language Processing techniques (e.g., named entity recognition, sentiment analysis, topic modeling)	○	○	○	○	○
Computational linguistics (machine translation, speech recognition, human-computer interaction)	○	○	○	○	○
Machine learning methods (Decision trees, SVM, neural networks, K-means, etc.)	○	○	○	○	○
Search and Information retrieval (Lucene, SOLR, ElasticSearch)	○	○	○	○	○
Image processing and classification	○	○	○	○	○
Geospatial data integration	○	○	○	○	○

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* 36. Please indicate your team's experience working with each type of data:

For each option, please select the highest level of experience gained by any individual member of your team, or "None / Not Relevant" if not relevant.

	None / Not Relevant	Beginner	Intermediate	Advanced	Expert
Traditional (e.g., numerical, categorical, or binary)	○	○	○	○	○
Images (e.g., satellite images, aerial photography, geo-located photos)	○	○	○	○	○
Geographic/geospatial/georeferenced data (e.g., maps, Earth observations, GPS signals)	○	○	○	○	○
Call detail records (e.g., site-to-site traffic, mobility data with bandicoot indicators)	○	○	○	○	○
Network data (e.g., social network data)	○	○	○	○	○
Text (e.g., emails, tweets, news articles)	○	○	○	○	○
Time series (e.g., user behaviour data, log files)	○	○	○	○	○
Sensor data (e.g., meteorological data, atmospheric measurements, GPS trajectory data)	○	○	○	○	○

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* 37. Please indicate your team's experience with each of the following statistical and machine learning methods:

For each option, please select the highest level of experience gained by any individual member of your team, or "None / Not Relevant" if not relevant.

	None / Not Relevant	Beginner	Intermediate	Advanced	Expert
Bayesian statistics	◯	◯	◯	◯	◯
Classification	◯	◯	◯	◯	◯
Clustering	◯	◯	◯	◯	◯
Deep learning / Neural networks	◯	◯	◯	◯	◯
Maximum likelihood analysis	◯	◯	◯	◯	◯
Natural language processing / Text mining	◯	◯	◯	◯	◯
Optimization	◯	◯	◯	◯	◯
Prediction	◯	◯	◯	◯	◯
Regression	◯	◯	◯	◯	◯
Simulation	◯	◯	◯	◯	◯
Survival analysis	◯	◯	◯	◯	◯
Anomaly detection	◯	◯	◯	◯	◯

Other (please specify method and experience)

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APPLICATION FORM

Project Proposal

Please provide a brief description of your proposed project, including objectives and methods, requested datasets, and the potential impact of your work.

* 38. Proposed title of project

* 39. Please describe your research question, hypothesis, or the objective of your proposal.

What is the purpose of your project? What would you like to study, evaluate, develop, design, or implement?

*Only the first **150** words will be considered.*

* 40. Data for Climate Action theme(s) relevant to your proposal:

Please only select themes significantly addressed by your proposal. You may select multiple themes.

- [ ] Climate Mitigation: Energy
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- [ ] Climate & Other SDGs: Other

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* 41. Challenge datasets requested:

Please see the dataset descriptions available on the Data for Climate Action website. If not specified, you may request a geographic or temporal scope for a dataset. In this case, please refer to the next question.

- [ ] BBVA Data & Analytics
- [ ] Crimson Hexagon
- [ ] Earth Networks
- [ ] Orange (Senegal)
- [ ] Orange (France)
- [ ] Orange (Morocco)
- [ ] Nielsen
- [ ] Planet
- [ ] Plume Labs
- [ ] Schneider Electric
- [ ] Waze

42. Please specify the desired scope of datasets requested, if applicable:

Including geographic, temporal, and other scope parameters: for example, "Paris, France, from May-June 2015" " or "50 square km around Dakar, Senegal, from 2014 to 2015."

Crimson Hexagon:

Earth Networks:

Planet:

Plume Labs:

Schneider Electric:

Waze:

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APPLICATION FORM

Project Proposal (continued)

* 43. Please describe the motivation behind your project and its potential impact.

What motivates you to develop this project proposal? What potential impacts do you expect to result from your project? For example: it could advance the state of the art in your scientific field; it could support data-driven policy making; or it could help scale certain solutions. Please be as concrete as possible.

*Only the first **250** words will be considered.*

* 44. Please briefly describe your proposed methodology and research design.

What techniques and analytical approaches do you plan to use? What steps do you plan to take to reach your objectives? For example, you could include an explanation of how the requested datasets would contribute to addressing your research question and/or to devising an original solution to a problem relevant to climate change. You may also define a list of research priorities or benchmarks.

*Only the first **250** words will be considered.*

* 45. Please describe any privacy or ethical considerations that may result from your project and how you expect to address them:

For example, any protocols and/or processes you intend to use to ensure privacy and responsible analysis of data. For more information, please refer to the "Privacy and Data Protection Principles" developed by UN Global Pulse.

*Only the first **250** words will be considered.*

* 46. Expected type of final research submission

- ◯ Research paper or poster
- ◯ Application or tool

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47. Keywords

Please use semicolons to separate keywords.

* 48. Please indicate the total number of person-days that you plan to spend on your research project:

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APPLICATION FORM

Project Proposal (continued)

* 49. Do you plan to leverage (or would you be interested in leveraging) a cloud computing environment or data visualization platform for your proposed research for the duration of the Challenge?

- ◯ Yes
- ◯ No

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APPLICATION FORM

Project Proposal (continued)

* 50. Would you like your application to be considered for a temporary license for data visualization software and support from Tableau (Tableau Desktop Professional)?

- ◯ Yes
- ◯ No

* 51. Would you like your application to be considered for cloud computing support from Microsoft Azure for Research?

- ◯ Yes
- ◯ No

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APPLICATION FORM

Project Proposal (continued)

52. Please indicate any additional open and public datasets you plan to use:

If applicable, please list and provide a link to the datasets. If not applicable, leave blank.

53. Please indicate any additional proprietary or other datasets you plan to use:

If applicable, please describe the datasets and their sources (e.g., internal operational business data, or data collected using sensors by your company). If not applicable, leave blank.

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APPLICATION FORM

Background and Skills

Please tell us about your general academic and professional background as it applies to your proposed research.

* 54. Please enter your experience in each of the areas of expertise listed below:

	None / Not Relevant	Beginner	Intermediate	Advanced	Expert
Earth and Environmental Sciences	◯	◯	◯	◯	◯
Mathematics and Statistics	◯	◯	◯	◯	◯
Engineering	◯	◯	◯	◯	◯
Computer Science and Information Technologies	◯	◯	◯	◯	◯
Data Science	◯	◯	◯	◯	◯
Policy and/or Social Sciences	◯	◯	◯	◯	◯

Other (please specify area of expertise and experience)

* 55. Do you have prior experience working on climate-related projects, particularly in areas that are similar or relevant to your research proposal?

This could include academic or industry projects regarding climate mitigation, adaptation, and resilience.

◯ Yes

◯ No

If yes, please provide a brief description and links (one per line) to any content you consider relevant (e.g., peer-reviewed research papers, published results, blogs, code, etc.):

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* 56. Do you have prior experience with public policy design or analysis, including program monitoring and evaluation, particularly in areas that are similar or relevant to your research proposal?

- ◯ Yes
- ◯ No

If yes, please provide a brief description and links (one per line) to any content you consider relevant (e.g., peer-reviewed research papers, published results, blogs, code, etc.):

* 57. Have you published any papers or developed any applications, demos, or visualizations that demonstrate your ability to conduct the research described in your proposal?

- ◯ Yes
- ◯ No

If yes, please provide a brief description and links (one per line) to any content you consider relevant (e.g., peer-reviewed research papers, published results, blogs, code, etc.):

* 58. Please indicate your experience in communicating research:

	None / Not Relevant	Beginner	Intermediate	Advanced	Expert
Academic / Scientific writing	◯	◯	◯	◯	◯
Policy analysis	◯	◯	◯	◯	◯
Data visualization	◯	◯	◯	◯	◯
Dashboard / Application development	◯	◯	◯	◯	◯

Other (please specify skill and experience)

* 59. Please specify which tools you typically use for developing visualisations:

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APPLICATION FORM

Background and Skills (continued)

Please tell us more about your knowledge and skills in the field of data science as they apply to your proposed research.

* 60. Please indicate your experience in the field of computer science:

	None / Not Relevant	Beginner	Intermediate	Advanced	Expert
Programming	◯	◯	◯	◯	◯
Software engineering	◯	◯	◯	◯	◯
System administration	◯	◯	◯	◯	◯
Database management	◯	◯	◯	◯	◯
Managing structured data (e.g., parsing, cleaning, joining, etc.)	◯	◯	◯	◯	◯
Managing unstructured data (e.g., parsing, cleaning, joining, etc.)	◯	◯	◯	◯	◯
Big data and distributed data processing frameworks	◯	◯	◯	◯	◯
Managing or developing cloud-based infrastructures (e.g., Azure, Google Cloud)	◯	◯	◯	◯	◯
Scientific computing	◯	◯	◯	◯	◯

* 61. Do you have prior experience working with big data or on data-intensive projects, particularly ones that are similar or relevant to your research proposal?

◯ Yes

◯ No

If yes, please provide links to GitHub or other similar repositories, and links to any content you consider relevant (e.g., peer-reviewed research, published results, blogs, code, etc.) (one per line):

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* 62. Please specify which tools/frameworks you typically use to analyze big data:

If none, write "N/A"

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APPLICATION FORM

Background and Skills (continued)

* 63. Please indicate your knowledge and skills in the field of data science as they relate to your proposed research:

	None / Not Relevant	Beginner	Intermediate	Advanced	Expert
Information extraction using Natural Language Processing techniques (e.g., named entity recognition, sentiment analysis, topic modeling)	○	○	○	○	○
Computational linguistics (e.g., machine translation, speech recognition, human-computer interaction)	○	○	○	○	○
Machine learning methods (Decision trees, SVM, neural networks, K-means, etc.)	○	○	○	○	○
Search and Information retrieval (Lucene, SOLR, ElasticSearch)	○	○	○	○	○
Image processing and classification	○	○	○	○	○
Geospatial data integration	○	○	○	○	○

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* 64. Please indicate your experience working with each type of data:

	None / Not Relevant	Beginner	Intermediate	Advanced	Expert
Traditional (e.g., numerical, categorical, or binary)	○	○	○	○	○
Images (e.g., satellite images, aerial photography, geo-located photos)	○	○	○	○	○
Geographic/geospatial/georeferenced data (e.g., maps, Earth observations, GPS signals)	○	○	○	○	○
Call detail records (e.g., site-to-site traffic, mobility data with bandicoot indicators)	○	○	○	○	○
Network data (e.g., social network data)	○	○	○	○	○
Text (e.g., emails, tweets, news articles)	○	○	○	○	○
Time series (e.g., user behaviour data, log files)	○	○	○	○	○
Sensor data (e.g., meteorological data, atmospheric measurements, GPS trajectory data)	○	○	○	○	○

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* 65. Please indicate your experience with each of the following statistical and machine learning methods:

	None / Not Relevant	Beginner	Intermediate	Advanced	Expert
Bayesian statistics	○	○	○	○	○
Classification	○	○	○	○	○
Clustering	○	○	○	○	○
Deep learning / Neural networks	○	○	○	○	○
Maximum likelihood analysis	○	○	○	○	○
Natural language processing / Text mining	○	○	○	○	○
Optimization	○	○	○	○	○
Prediction	○	○	○	○	○
Regression	○	○	○	○	○
Simulation	○	○	○	○	○
Survival analysis	○	○	○	○	○
Anomaly detection	○	○	○	○	○

Other (please specify method and experience)

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APPLICATION FORM

Terms of Participation

* 66. Please indicate that you have read and accept the Terms of Participation for the Data for Climate Action challenge:

- [ ] I understand and agree to comply with the Terms of Participation for the Data for Climate Action challenge, and attest that I meet all requirements listed. If I am applying on behalf of a team, I acknowledge that I am accepting the Terms of Participation on behalf of that team.
- [ ] I understand that, in the event that my research proposal is accepted, access to datasets as requested will also be conditional upon accepting and complying with the terms and conditions of access and use of the respective datasets, as established by the entities that own the data. Failure to accept or comply with those terms may result in denial of access and/or disqualification from the Data for Climate Action challenge.

* 67. Would you like to receive email updates regarding the Data for Climate Action challenge?

These updates will be sent to the email you have indicated previously. Your email will not be used for promotional purposes, etc.

- ◯ Yes, I am interested in receiving email updates regarding the Challenge.
- ◯ No, I am not interested in receiving email updates regarding the Challenge.

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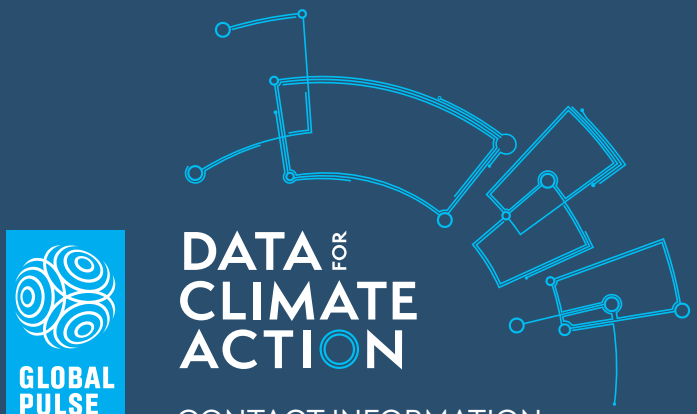

GLOBAL PULSE

DATA FOR CLIMATE ACTION

CONTACT INFORMATION

For information on the Challenge, visit:
DataforClimateAction.org

Questions? Email us:
dataforclimate@unglobalpulse.org

Social, follow #D4CA:
@dataforclimate
fb/UNGlobalPulse

Global Pulse is an initiative of the United Nations. Its mission is to accelerate discovery, development, and adoption of big data innovations for sustainable development and humanitarian action.

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