IBM Environmental Intelligence Suite

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# GETTING STARTED GUIDE

Created for <mark>IBM Call for Code Research Challenge 2021</mark>

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# Introduction

**Thank you for choosing Environmental Intelligence Suite, helping you make critical weather-related decisions!**
In this guide, you will find the essential information needed to start the journey with IBM Environmental Intelligence Suite, such as API key credentials for Weather Data and the list of alert Perils you have access to.

IBM Environmental Intelligence Suite is a suite of applications based on the world's most accurate weather data from The Weather Company, as well as several petabytes of geospatial-temporal data from the Geospatial Analytics engine born out of IBM Research, which include a variety of industry-specialized data such as COVID-19 (epidemiology) and crop health (agriculture).

While this would equip you with the state-of-the-art weather technology and data science capabilities imperative in the era of machine learning and AI, our goal is to help you understand the data and its impact on your business and take actions to avoid disruptions and ensure business continuity. This is made possible through Dashboard Visualizations to extract insights in a user-friendly manner and through Alert Console to send out short- to long-term notifications and action items to the right people, at the right time.
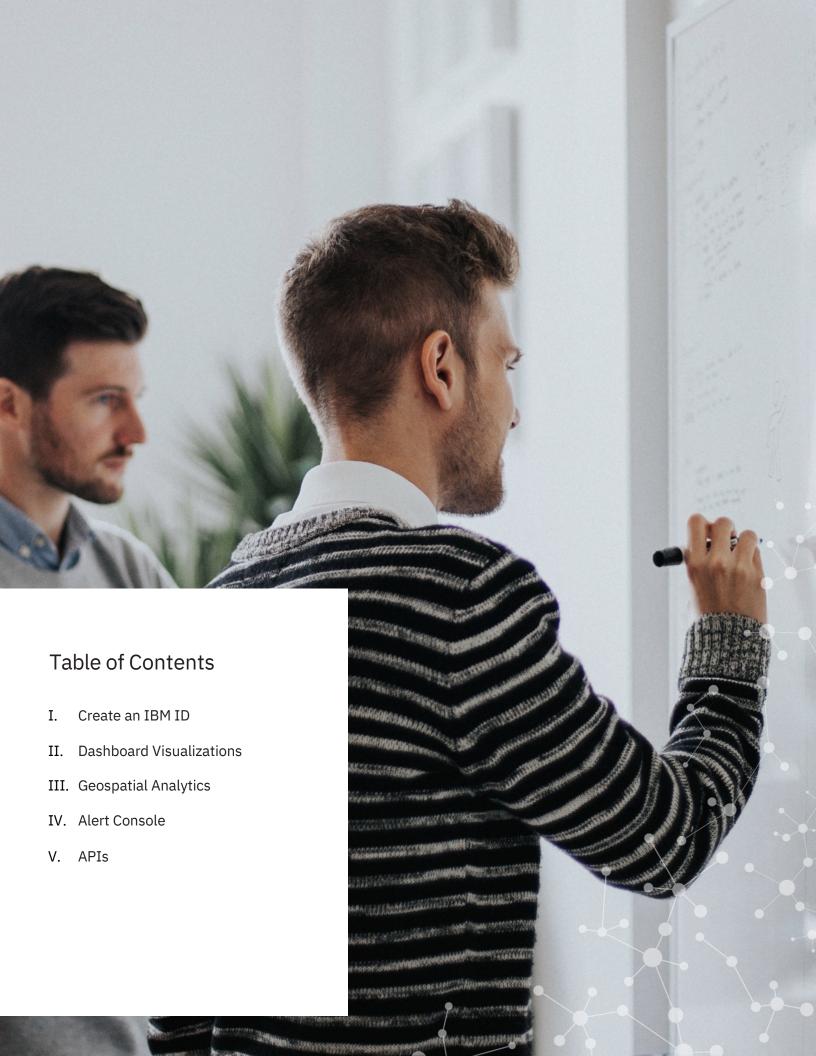
We are constantly improving  our product to best serve our clients as a reliable technology companion. If you have any questions or feedback, please do not hesitate to reach out to us.

We hope you're as excited as we to start your journey to discover the hidden truth behind how weather impacts your business and how to transform weather into your ally.  As our colleague John Bosse (Offering Manager) tells our newly joined team members, "You will be a weather geek before you know it!"

**IBM Environmental Intelligence Suite**
Offering Management Team

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# I. Create an IBMid (you most likely have already done this step)

Create your IBMid at https://ibm.co/2YZuI1b

The first step is getting your users set up with an IBMid.
You can use your existing company email to serve as your IBMid.
Skip this step and move on to the next section, if you already
have an IBMid set up.

Once your IBMid is created, you can access IBM Environmental
Intelligence Suite following the instructions in the next sections.

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## II. Dashboard Visualizations

Access to the Dashboard Visualizations has been provisioned for the users requested.

Step **1**

Click on the *Dashboard Visualizations* card from the Main Environmental Intelligence Suite screen at:

[http://environmentalintelligencesuite.ibm.com/](http://environmentalintelligencesuite.ibm.com/)

Step **2**

Log in using your IBMid and password

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# III.  Geospatial Analytics

There are two ways in which you can access Geospatial Analytics.

First, you can use the browser-based Geospatial Analytics UI to explore the data catalog, view sample queries and build your own queries via a guided interface.

Second, you can use a Jupyter / Python notebook, or any program that can submit HTTPS requests, to interact with the Geospatial Analytics API.

## Geospatial Analytics - UI

Click on the *Geospatial Analytics* card from the
Main Environmental Intelligence Suite page.

Sign in with your IBMid and password.

## Geospatial Analytics - API

The Geospatial Analytics API key is used to retrieve an API access token.

Within the next several hours, the IBM Environmental Intelligence Suite access management team will send individual emails containing an API key to each person authorized to use the Geospatial Analytics API.

See the following documentation for more information.

Geospatial Analytics API Authentication

Obtaining an API Access Token

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## IV. Alert Console – <span style="color:red">This section only applies if you have requested access to this component. If you would like access, please reach out to [johncohn@us.ibm.com](mailto:johncohn@us.ibm.com) or [dori.Bruno@ibm.com](mailto:dori.Bruno@ibm.com).</span>

An automated email will be sent, asking you to click a link to confirm your identity for login to [https://myibm.ibm.com/](https://myibm.ibm.com/).

Once your account is confirmed, you will have access to Alert Console on [http://environmentalintelligencesuite.ibm.com/](http://environmentalintelligencesuite.ibm.com/).

We have configured your account with the following weather Perils to start.

**Weather Perils Provisioned : USA**

| Peril ID | Description |
| --- | --- |
| NWS_TOR | A Tornado Warning has been issued. A tornado is imminent. Seek shelter immediately. |
| NWS_SVR | A Severe Thunderstorm Warning has been issued for severe thunderstorms that are either occurring or are imminent. Winds of 58 mph or higher and/or hail 1" in diameter or larger are associated with these kind of storms. |
| NWS_FLW | A River Flood Warning has been issued for flooding along a river that is imminent or occurring. |
| NWS_HIGH_WIND_WARNING | A High Wind Warning has been issued to warn of sustained winds exceeding 40 mph for more than an hour or winds gusts exceeding 58 mph for any duration. |
| NWS_HURRICANE_WARNING | A Hurricane Warning has been issued. Tropical cyclone winds of 74 mph or higher are expected within the next 36 hours. |
| NWS_TROPICAL_STORM_WARNING | A Tropical Storm Warning has been issued. Sustained winds between 39 and 73 mph are expected within the next 36 hours. |
| NWS_WINTER_STORM_WARNING | A Winter Storm Warning has been issued due to hazardous winter weather that is either occurring or is imminent. Significant snow/sleet/ice and wind can be associated with this storm. |
| NWS_BLIZZARD_WARNING | A Blizzard Warning has been issued to warn of snow/blowing snow causing 1/4 mile visibility or less and winds exceeding 35 mph within the next 12 to 18 hours. |
| NWS_FLOOD_WARNING | An Areal Flood Warning has been issued to warn of flooding over a large area including streets, low-lying areas, creeks, and small streams. |
| ACCUM_PRECIP_TOTAL_24HR_GTE_25.40_MM | Rainfall of 1 inch or more is forecast in the next 24 hours. |
| ACCUM_SNOW_TOTAL_24HR_GTE_0.08_M | Snow forecast of 3 inches or more in the next 24 hours. |
| GCOD_ACCUM_PRECIP_TOTAL_1HR_GTE_25.40_MM | Rainfall greater than 1 inch in the past hour. |
| GCOD_ACCUM_SNOW_TOTAL_1HR_GTE_0.0254_M | Snow greater than 1 inch in the past 1 hour. |
| GCOD_WIND_GUST_SFC_GTE_17.88_MS | Wind gusts above 40 mph occurred within the past hour. |
| WIND_SPEED_SFC_24HR_GTE_17.88_MS | Wind speeds above 40 mph are forecast to occur in your area over the next 24 hours. |
| SSDS_INGESTOR_HEARTBEAT | This product delivers a heartbeat originating in the SSDS ingestor microservice at a fixed interval for an asset at 68.92, -138.2 |

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# Weather Perils Provisioned : Canada

| Peril ID | Description |
|---|---|
| ACCUM_PRECIP_TOTAL_24HR_GTE_25.40_MM | Rainfall of 1 inch or more is forecast in the next 24 hours. |
| ACCUM_SNOW_TOTAL_24HR_GTE_0.08_M | Snow forecast of 3 inches or more in the next 24 hours. |
| CANADA_BLIZZARD_WARNING | A Blizzard Warning has been issued. Blowing snow from winds of 40 km/h or greater is expected reducing visibility to 400m or less over the next 4 hours. |
| CANADA_HURRICANE_WARNING (not in winter) | Hurricane Warning |
| CANADA_RAINFALL_WARNING | A Rainfall Warning has been issued. Heavy downpours of rain are expected. |
| CANADA_SEVERE_THUNDERSTORM_WARNING | A Severe Thunderstorm Warning has been issued. Evidence of wind gusts of 90 km/h or greater along with 2cm or larger hail stones and heavy rain is imminent or occurring. |
| CANADA_SNOWFALL_WARNING (not in summer) | A Snowfall Warning has been issued. Major accumulations of snow are expected over the next several hours. |
| CANADA_STRONG_WIND_WARNING | Strong Wind Warning |
| CANADA_TORNADO_WARNING (not in winter) | A Tornado Warning has been issued. A tornado has been reported; or when there is evidence based on radar, or from a reliable spotter that a tornado is imminent. |
| CANADA_TROPICAL_STORM_WARNING (not in winter) | Tropical Storm Warning |
| CANADA_WINTER_STORM_WARNING | A Winter Storm Warning has been issued. Severe and potentially dangerous winter weather conditions are expected, including: Major snowfall of 25 cm or more combined with other cold weather precipitation types, strong winds, blowing snow, and/or extreme cold. |
| GCOD_ACCUM_PRECIP_TOTAL_1HR_GTE_25.40_MM | Rainfall greater than 1 inch in the past hour. |
| GCOD_ACCUM_SNOW_TOTAL_1HR_GTE_0.0254_M | Snow greater than 1 inch in the past 1 hour. |
| GCOD_WIND_GUST_SFC_GTE_17.88_MS | Wind gusts above 40 mph occurred within the past hour. |
| SSDS_INGESTOR_HEARTBEAT | This product delivers a heartbeat originating in the SSDS ingestor microservice at a fixed interval for an asset at precisely 68.92, -138.2 |
| WIND_SPEED_SFC_24HR_GTE_17.88_MS | Wind speeds above 40 mph are forecast to occur in your area over the next 24 hours. |

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## Weather Perils Provisioned : Europe

| Peril ID | Description |
|---|---|
| METEOALARM_DISRUPTION_DUE_TO_FLOOD | A Meteoalarm Disruption has been issued due to the possibility of extensive flooding. Be on the lookout for rising waters. |
| METEOALARM_DISRUPTION_DUE_TO_THUNDERSTORM | A Meteoalarm Disruption has been issued due to dangerous thunderstorms that pose a threat to life and property. |
| METEOALARM_DISRUPTION_DUE_TO_RAIN | Disruption due to rain |
| METEOALARM_DISRUPTION_DUE_TO_RAIN_AND_FLOOD | Disruption due to rain and flood |
| METEOALARM_DISRUPTION_DUE_TO_SNOW_AND_ICE | A Meteoalarm disruption has been issued due to dangerous conditions caused by snow and/or ice accumulations in the next 24 hours. Damage and casualties are likely to happen. |
| METEOALARM_DISRUPTION_DUE_TO_WIND | Disruption due to wind |
| ACCUM_PRECIP_TOTAL_24HR_GTE_25.40_MM | Rainfall of 1 inch or more is forecast in the next 24 hours. |
| ACCUM_SNOW_TOTAL_24HR_GTE_0.08_M | Snow forecast of 3 inches or more in the next 24 hours. |
| GCOD_ACCUM_PRECIP_TOTAL_1HR_GTE_25.40_MM | Rainfall greater than 1 inch in the past hour. |
| GCOD_ACCUM_SNOW_TOTAL_1HR_GTE_0.0254_M | Snow greater than 1 inch in the past 1 hour. |
| GCOD_WIND_GUST_SFC_GTE_17.88_MS | Wind gusts above 40 mph occurred within the past hour. |
| WIND_SPEED_SFC_24HR_GTE_17.88_MS | Wind speeds above 40 mph are forecast to occur in your area over the next 24 hours. |
| SSDS_INGESTOR_HEARTBEAT | This product delivers a heartbeat originating in the SSDS ingestor microservice at a fixed interval for an asset at precisely 68.92, -138.2 |

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## Weather Perils Provisioned : Global

| Peril ID | Description |
|---|---|
| ACCUM_PRECIP_TOTAL_24HR_GTE_25.40_MM | Rainfall of 1 inch or more is forecast in the next 24 hours. |
| ACCUM_SNOW_TOTAL_24HR_GTE_0.08_M | Snow forecast of 3 inches or more in the next 24 hours. |
| GCOD_ACCUM_PRECIP_TOTAL_1HR_GTE_25.40_MM | Rainfall greater than 1 inch in the past hour. |
| GCOD_ACCUM_SNOW_TOTAL_1HR_GTE_0.0254_M | Snow greater than 1 inch in the past 1 hour. |
| GCOD_WIND_GUST_SFC_GTE_17.88_MS | Wind gusts above 40 mph occurred within the past hour. |
| WIND_SPEED_SFC_24HR_GTE_17.88_MS | Wind speeds above 40 mph are forecast to occur in your area over the next 24 hours. |
| SSDS_INGESTOR_HEARTBEAT | This product delivers a heartbeat originating in the SSDS ingestor microservice at a fixed interval for an asset at precisely 68.92, -138.2 |

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# IV. Alert Console

## Configuring the weather Perils via interface

1. Click on the *Alert Console* card from the Main Environmental Intelligence Suite page.
2. Log in with your IBMid
3. Click the "Configure" button in the left-hand navigation to go to the Configure Service screen

   - ✓ Under Alert Types, activate the available perils by clicking the toggle switch or peril name

   - ✓ Under Alert Messages, customize the Company Name

## Accessing the alerting/notification capabilities using an API

1. Click the API button in the left-hand navigation to access links to API documentation and key management.
2. For a simple use case of sending alerts to a URL endpoint, you can use the API key and secret for your account and API documentation to:

   - ✓ Add a basic auth endpoint to receive alerts. The endpoint should be configured to recognize this JSON payload format (Customer Endpoint Design section).

   - ✓ Create an Asset (location) to monitor for alerts (Create an Asset section).

   - ✓ Assets can also be created by using the web-based dashboard at https://myibm.ibm.com/.

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# V. Weather APIs

## STANDARD
### INCLUDED - 1M API CALLS/MONTH
### ADD-ON - PER 1M API CALLS

| CORE | ENHANCED CURRENT CONDITIONS | ENHANCED FORECAST | LIFESTYLE | HOD |
|---|---|---|---|---|
| Site Based Current Conditions<br><br>10-Day Daily Forecasts<br><br>48-Hr Hourly Forecasts<br><br>Weather Alerts<br><br>Almanac<br><br>Weather Imagery including Radar and Satellite<br><br>Snow Depths | Currents on Demand<br><br>Personal Weather Station Observations | Precipitation Forecast<br><br>15 Minute Forecast<br><br>15 Day Hourly Forecast | Indices: Air Quality, Pollen, Flu Outbreak, Tides, Aches & Pains, Breathing, Dry Skin, Frizz, Frost Potential Golf Heating & Cooling, Leisure Travel Running Weather, Ski, Static Electricity | Historical Weather Data on Demand<br><br>**Aviation**<br><br>Core |

## PREMIUM
### NONE INCLUDED
### ADD-ON - PER 1M API CALLS

| AGRICULTURE | SEVERE WEATHER | HDAT-EXT |
|---|---|---|
| Reference Evapo Crop specific, Reference Evapo, Model Evapo, Soil Moisture, Soil Temperature | 15 Day Cyclone Forecast<br><br>Shear, Hail, Rain, Snow, Ice | Solar Irradiance<br><br>Evapotranspiration |
| **RENEWABLES** | **PROBABILISTIC** | |
| Wind Speed & Direction Air Density Irradiance | Distribution out 10 days<br><br>QPF Hourly Accumulated | |
| **SEASONAL** | **GEOSPATIAL** | |
| Seasonal & Sub-Seasonal | Geospatial Currents & Forecast Polygon / Gridded | |

## DEVELOPMENT
### INCLUDED
### 1,000 CALLS PER DAY

| ALL STANDARD PREMIUM |
|---|
| Core<br><br>Enhanced Currents<br><br>Enhanced Forecast<br><br>Lifestyle<br><br>HOD<br><br>Agriculture<br><br>Renewables<br><br>Severe Weather<br><br>Lifestyle<br><br>… |

| API Package | Documentation |
|---|---|
| Environmental Intelligence Suite – Standard | ibm.co/3ddEGm5 |
| Environmental Intelligence Suite – Premium | ibm.co/3jzc09t |

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# V. Weather APIs

These API endpoints tap into current and forecast conditions, seasonal and severe weather. The APIs are curated to give you only what you need in the format you need it, including alerts, notifications, forecast data, weather imagery, and damaging weather

## Standard APIs

**Core**  Access many of the most essential weather APIs, ranging from current conditions and forecasts to radar and satellite data. Current conditions include site-based current observations and time series observations.

**Enhanced current conditions**  Leverage data from one of the highest-resolution weather observation networks in the field based on a robust network of personal weather stations (PWSs) and traditional data sources (METAR and SYNOP). Also included is a Currents on Demand solution, an observed conditions data set covering the globe at a 4-km resolution with select variables downscaled to 500 m.

**Enhanced forecast**  Use forecast models built using leading-edge model forecasting, expertise from over 100 meteorologists, and a network of observations, radar, and satellite assimilations and modelling capabilities.

**Lifestyle Indices**  Air quality, pollen observations, flu outbreak observations, tides, aches and pains, breathing, dry skin, frizz, static electricity, frost potential, heating and cooling, golf, leisure travel, running, skiing, mosquito activity

**Historical weather data**  More easily understand weather's impact on your business and better manage future outcomes with the industry's most precise and accurate historical record of weather data1 that includes hourly values for surface temperature, wind speed and direction, relative humidity, atmospheric pressure, and dewpoint.

## Premium APIs

**Geospatial Currents and Forecast** Leveraging our 4-km resolution variables for currents and forecast, request KML or GeoJSON results back to integrate into GIS platforms for mass data analysis or consumption.

**Severe weather** Obtain real-time severe weather data related to tornadoes, high winds and hurricanes to assist you in protecting your assets by allowing you to stay ahead of adverse weather conditions and assess trailing damage estimates.
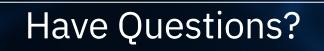
**Seasonal and subseasonal forecasts** Plan for market shifts that may affect profitability with forecasts that provide a comprehensive and detailed view of the anticipated temperature and precipitation anomalies over the next 3 – 5 weeks, 1 – 4 months and 1 – 7-months timeframes.

**Probabilistic** Make more informed decisions with the Probabilistic Forecast that helps users understand the likelihood of various weather events happening and their potential impact.

**Renewables** Predict and assess key weather parameter impacts on renewable energy production and efficiency with the Renewable Weather Data Package.

**Agriculture** Make more informed decisions with a robust set of agricultural specific APIs providing hourly forecasts out to 15 days, built using a weighted blend of the following weather models: GFS Operational & Ensemble, ECM Operational, NAM & IBM GRAF.

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# Have Questions?

Send us an email at

weathercustomersupport@ibm.com

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