CLAIMS

~~What is Claimed Is:~~

1. A system comprising:

one or more weather data source systems configured to generate one or more weather data streams, the one or more weather data streams including weather forecast model data and weather observations data; and

a data distribution system in communication with the one or more weather data source systems via at least one network, the data distribution system configured to:

receive a weather index request,

identify at least one instrument and at least one location associated with the weather index request,

extract weather risk indication data among the one or more weather data streams associated with the identified at least one location based on one or more predefined parameters associated with the identified at least one instrument,

convert the extracted weather risk indication data into a set of weather index values corresponding to the at least one location, based on a predetermined algorithm associated with the identified at least one instrument,

generate a weather index presentation package comprising the set of weather index values for distribution to at least one user device, and

update the weather index presentation package ~~being distributed~~ concurrent with changes to the weather risk indication data,

wherein the predetermined algorithm comprises a degree day (DD) methodology configured to estimate a weather-based demand for the at least one instrument with respect to the at least one location, and

the predetermined algorithm further configured to maximize a correlation between the set of weather index values and a consumption value represented by the at least one instrument.

2. The system of claim 1, wherein the weather risk indication data includes temperature observation estimates associated with the identified at least one location for a predetermined number of sub-periods within a predetermined time period.

3. The system of claim 2, wherein the weather risk indication data further includes wind data and radiation data associated with the identified at least one location.

4. The system of claim 1, wherein the predetermined algorithm includes one or more weights associated with one or more of the identified at least one location, wind data and solar data.

5. The system of claim 1, wherein the DD methodology comprises~~predetermined algorithm is based on~~ a heating degree day (HDD) methodology associated with a heating demand and a cooling degree day (CDD~~HDD~~) methodology associated with a cooling demand.

6. The system of claim 5, wherein the one or more predefined parameters include a CDD critical value, a HDD critical value, a CDD exponent factor, a HDD exponent factor, at least one straddle factor and a cancellation factor.

7. The system of claim 5, wherein the predetermined algorithm determines the~~a~~ heating demand and the cooling demand for the identified at least one location, an instrument displacement from wind generation, an instrument demand due to seasonal wind generation, an instrument displacement from solar generation and an instrument demand due to passive solar generation.

8. The system of claim 1, wherein the identified at least one instrument is associated with energy instruments including natural gas.

9. The system of claim 1, wherein the set of weather index values is configured to offset a weather risk of the identified at least one instrument.

10. The system of claim 1, wherein the identified at least one instrument is associated with one or more of energy, agriculture, retail, fixed income, and equity markets.

11. The system of claim 1, wherein the data distribution system is further configured to determine one or more of at least one estimated settlement value and at least one actual settlement value of the set of weather index values.

12. The system of claim 1, wherein the data distribution system is further configured to generate an interactive graphical user interface (GUI) for interactively presenting the weather index presentation package to the at least one user device.

13. The system of claim 12, where the interactive GUI includes one or more windows configured to present one or more of a historical weather data region, a weather forecast region specific to the identified at least one location, a weather forecast map region, a user input region and an index-specific weather index region.

14. The system of claim 13, wherein the index-specific weather index region further comprises one or more of an index settlement value region, a weather index value region, a climatological value region, one or more bias correction tools and one or more performance weighting tools.

15. The system of claim 1, wherein the set of weather index values includes at least one indication of a departure from predetermined weather index value associated with the identified at least one instrument.

16. A method, the method comprising:

providing a data distribution system in communication with one or more weather data source systems via at least one network, the one or more weather data source systems configured to generate one or more weather data streams, the one or more weather data streams including weather forecast model data and weather observations data;

receiving, by the data distribution system, a weather index request;

identifying, by the data distribution system, at least one instrument and at least one location associated with the weather index request;

extracting, by the data distribution system, weather risk indication data among the one or more weather data streams associated with the identified at least one location based on one or more predefined parameters associated with the identified at least one instrument;

converting, by the data distribution system, the extracted weather risk indication data into a set of weather index values corresponding to the at least one location, based on a predetermined algorithm associated with the identified at least one instrument;

generating, by the data distribution system, a weather index presentation package comprising the set of weather index values for distribution to at least one user device; and

updating, by the data distribution system, the weather index presentation package ~~being distributed~~ concurrent with changes to the weather risk indication data,

wherein the predetermined algorithm comprises a degree day (DD) methodology configured to estimate a weather-based demand for the at least one instrument with respect to the at least one location, and

the predetermined algorithm further configured to maximize a correlation between the set of weather index values and a consumption value represented by the at least one instrument.

17. The method of claim 16, wherein the weather risk indication data includes temperature observation estimates associated with the identified at least one location for a predetermined number of sub-periods within a predetermined time period.

18. The method of claim 17, wherein the weather risk indication data further includes wind data and radiation data associated with the identified at least one location.

19. The method of claim 16, wherein the predetermined algorithm includes one or more weights associated with one or more of the identified at least one location, wind data and solar data.

20. The method of claim 16, wherein the DD methodology comprises~~predetermined algorithm is based on~~ a heating degree day (HDD) methodology associated with a heating demand and cooling degree day (CDD~~HDD~~) methodology associated with a cooling demand.

21. The method of claim 20, wherein the one or more predefined parameters include a CDD critical value, a HDD critical value, a CDD exponent factor, a HDD exponent factor, at least one straddle factor and a cancellation factor.

22. The method of claim 20, wherein said converting further comprising determining, via the predetermined algorithm, the~~a~~ heating demand and the cooling demand for the identified at least one location, an instrument displacement from wind generation, an instrument demand due to seasonal wind generation, an instrument displacement from solar generation and an instrument demand due to passive solar generation.

23. The method of claim 16, wherein the identified at least one instrument is associated with one or more of energy, agriculture, retail, fixed income, and equity markets.

24. The method of claim 16, wherein the set of weather index values is configured to offset a weather risk of the identified at least one instrument.

25. The method of claim 16, the method further comprising:

determining one or more of at least one estimated settlement value and at least one actual settlement value of the set of weather index values.

26. The method of claim 16, the method further comprising:

generating an interactive graphical user interface (GUI) for interactively presenting the weather index presentation package to the at least one user device; and

presenting, in one or more windows of the interactive GUI, one or more of a historical weather data region, a weather forecast region specific to the identified at least one location, a weather forecast map region, a user input region and an index-specific weather index region.

27. The method of claim 26, wherein the index-specific weather index region further comprises one or more of an index settlement value region, a weather index value region, a climatological value region, one or more bias correction tools and one or more performance weighting tools.

28. A non-transitory computer readable medium storing computer readable instructions that, when executed by one or more processing devices, cause the one or more processing devices to perform the functions comprising:

receiving a weather index request;

identifying at least one instrument and at least one location associated with the weather index request;

extracting weather risk indication data among one or more weather data streams associated with the identified at least one location based on one or more predefined parameters associated with the identified at least one instrument, the one or more weather data streams generated by one or more weather data source systems, the one or more weather data streams including weather forecast model data and weather observations data;

converting, by the data distribution system, the extracted weather risk indication data into a set of weather index values corresponding to the at least one location, based on a predetermined algorithm associated with the identified at least one instrument, the predetermined algorithm comprising a degree day (DD) methodology configured to estimate a weather-based demand for the at least one instrument with respect to the at least one location, the predetermined algorithm being configured to maximize a correlation between the set of weather index values and a consumption value represented by the at least one instrument~~based on a degree day (DD) methodology~~;

generating, by the data distribution system, a weather index presentation package comprising the set of weather index values for distribution to at least one user device; and

updating, by the data distribution system, the weather index presentation package ~~being distributed~~ concurrent with changes to the weather risk indication data.

29. The non-transitory computer readable medium of claim 28, wherein:

the weather risk indication data includes one or more of temperature observation estimates associated with the identified at least one location for a predetermined number of sub-periods within a predetermined time period, wind data and radiation data associated with the identified at least one location.

30. The non-transitory computer readable medium of claim 28, wherein at least one of:

the one or more predefined parameters includes one or more of a cooling DD (CDD) critical value, a heating DD (HDD) critical value, a CDD exponent factor, a HDD exponent factor, at least one straddle factor and a cancellation factor, and

the predetermined algorithm determines a heating and cooling demand for the identified at least one location, an instrument displacement from wind generation, an instrument demand due to seasonal wind generation, an instrument displacement from solar generation and an instrument demand due to passive solar generation.