

atmosmarine

Meteorology & Oceanography

INTELLIGENT SYSTEMS, EFFICIENT PROCESSES



AtmosMarine is a scientific technology company focused on weather and climate forecasting, environmental monitoring and analysis of meteorological and oceanographic data.

Missão

- ✓ Professional services in **Meteorology and Oceanography** with **higher quality** and lower cost.
- ✓ High-level technical team, with **advanced** scientific graduation made up of collaborators with at least a master's degree.
- ✓ Use the latest tools, more **modern computational models** and a more contemporary and intuitive graphic interface.
- ✓ Accurately predict, monitor and protect customer resources, so that they perform more profitable operations and with **less risk**.
- ✓ Scientists committed to providing the **best and the latest data** and results from meteo-oceanographic models on the market.



Produtos & Serviços

▶ **Meteorological & Oceanographic Forecast with local, regional and global scales, for short, medium and long term.**

▶ **Analysis of past data (Hindcast) and climate studies of agricultural and energy related variables, wind and waves.**

▶ **Design Criteria - Deep analysis of environmental data for engineering projects**

▶ **In-situ monitoring with meteo-oceanographic stations and buoys.**

▶ **Specialized assistance for search and rescue services (SAR)**

A new approach for the prediction of environmental parameters through the **combination of dynamic mathematical models** calibrated together with statistical models.

This **hybrid** approach (numerical-statistical) manages to use the knowledge of physics developed in the world so far, through the source terms of the environmental models, and isolates the error of the numerical model (residue) to then be simulated using **Neural Networks** (RNs).



We use the latest forecasting technology to help you accurately calculate your production and possible losses

Agriculture

Greater operational efficiency with more accurate scheduling of operations

Operational report / historical operation of the local climate for each region

Estimate crops / production for investors

Probabilistic climate windows per project

Forecast of rain, frost, fire, drought, etc.

Plan the application of pesticides and irrigation at the best times

AtmosMarine's short, medium and long term agriculture and weather forecasts are based on proprietary neural networks (artificial intelligence) using a combination of global and local, private and public mathematical models, along with historical indices of temperature, wind, rain and other climatic parameters that are used to estimate the yield of each area.

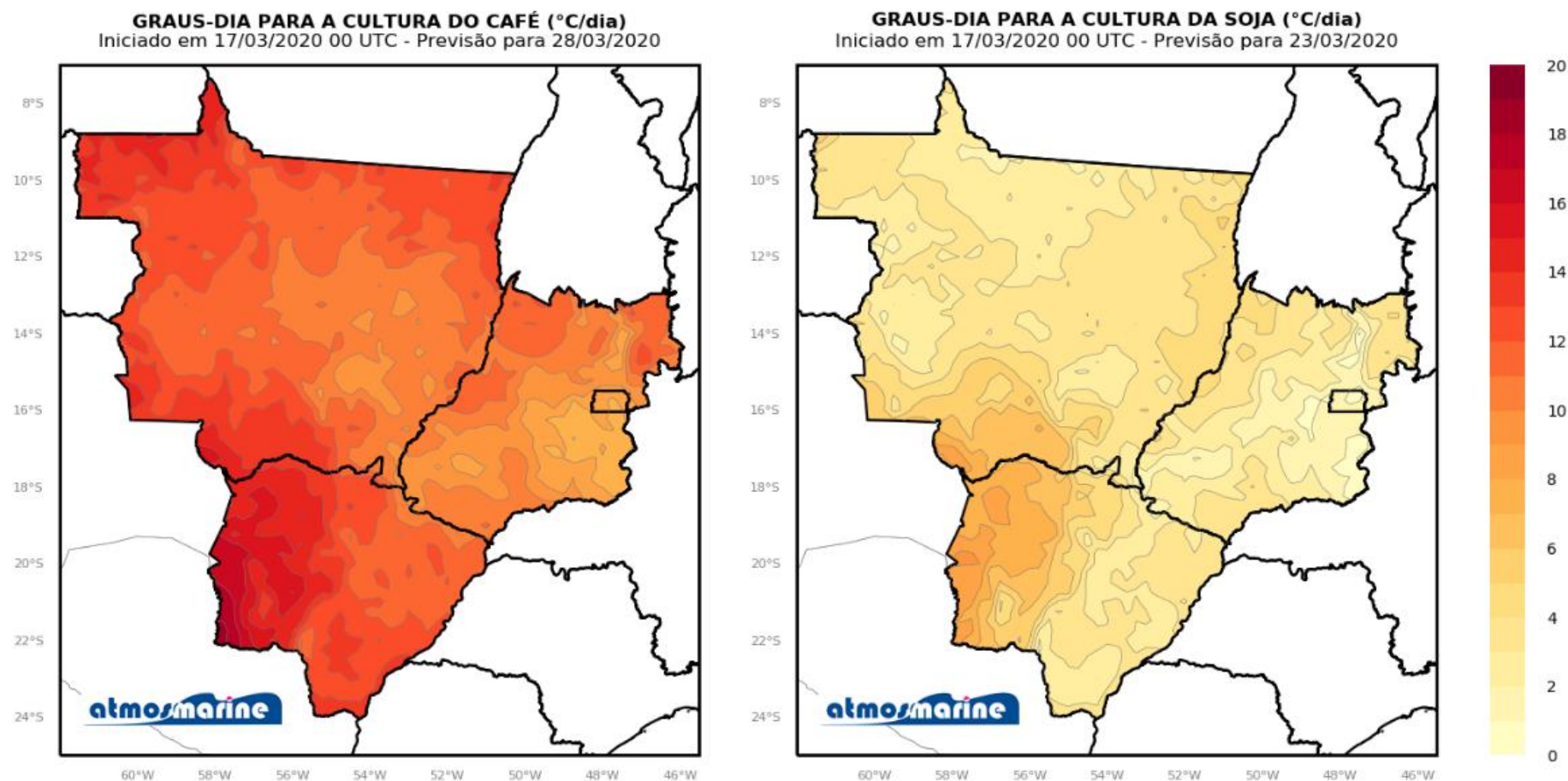
The forecast to understand if a region will be above or below the climatic averages, can be made for a period of up to one year in advance on a monthly basis.

Our data are unparalleled based on the verification of the last two years for agriculture farms in Brazil. One of the products we offer is the comparison with data from other companies, thus proving our competitive advantage.

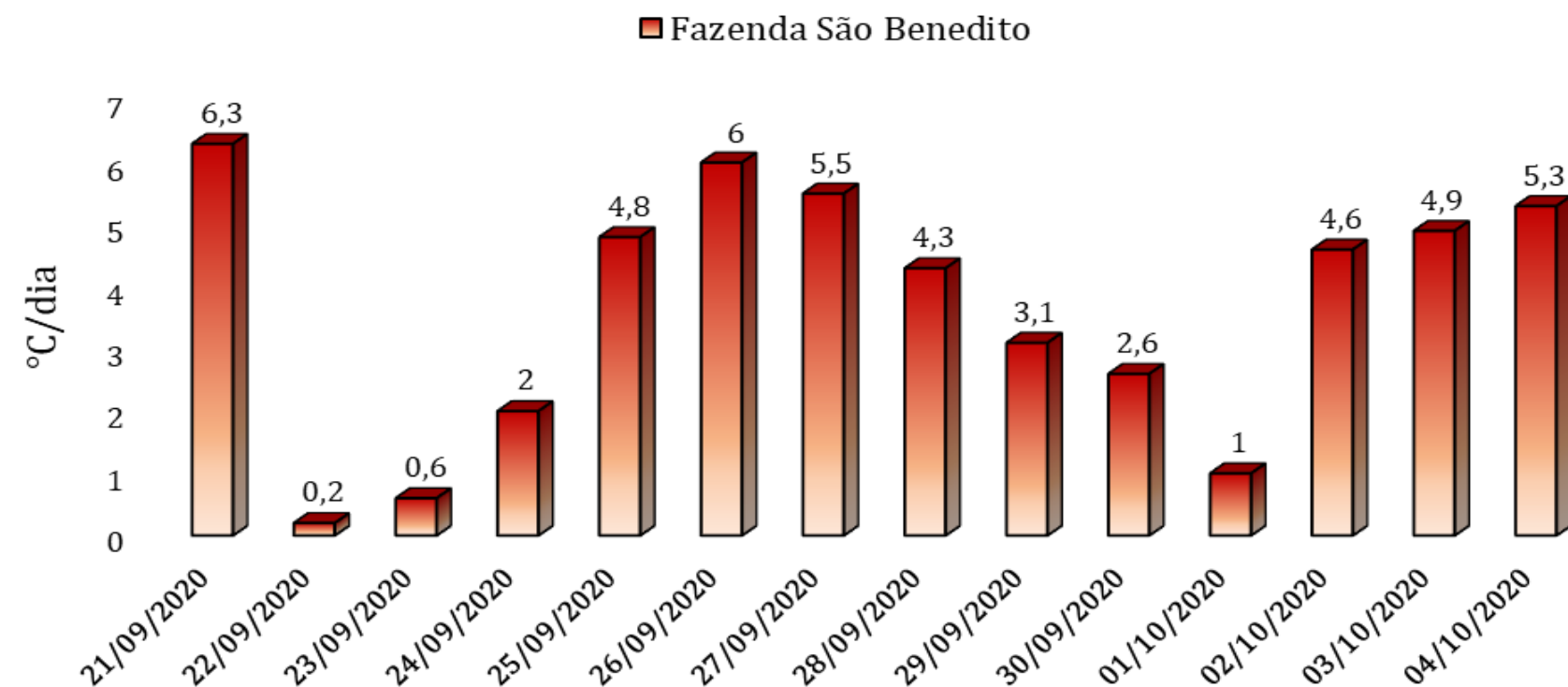
Advantages

With AtmosMarine you will always be at the forefront of changing weather conditions

- ✓ **Extremely accurate weather forecasts and predictive models integrated with artificial intelligence.**
- ✓ **Identification of the most suitable period to spray pesticides, to irrigate, to harvest.**
- ✓ **Comprehensive local and global data that provide the information needed for more robust decision making.**
- ✓ **Temperature, humidity, wind and precipitation forecasts using the most accurate data available in the world, updated at hourly intervals.**
- ✓ **AtmosMarine alerts about extreme events, unforeseen weather conditions, changes in production estimates and more.**
- ✓ **Higher yield with reduced climate-related risks.**
- ✓ **Longer planning ahead generating better profitability and efficiency**



Previsão de Graus-Dia para o arroz para os próximos 14 dias



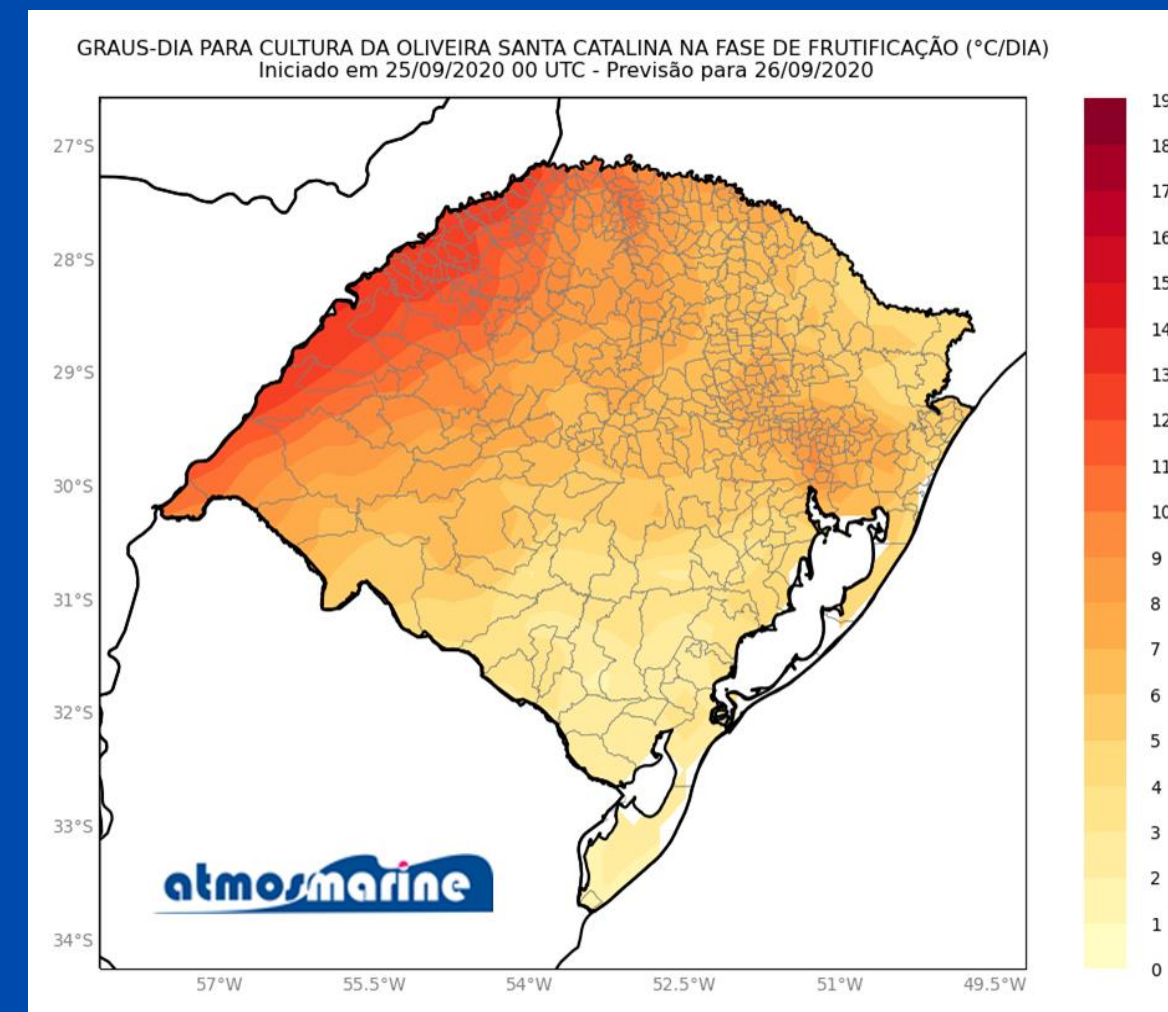
According to the accumulated values of degree-days, the producer will be able to know the best day to harvest his crop

Products

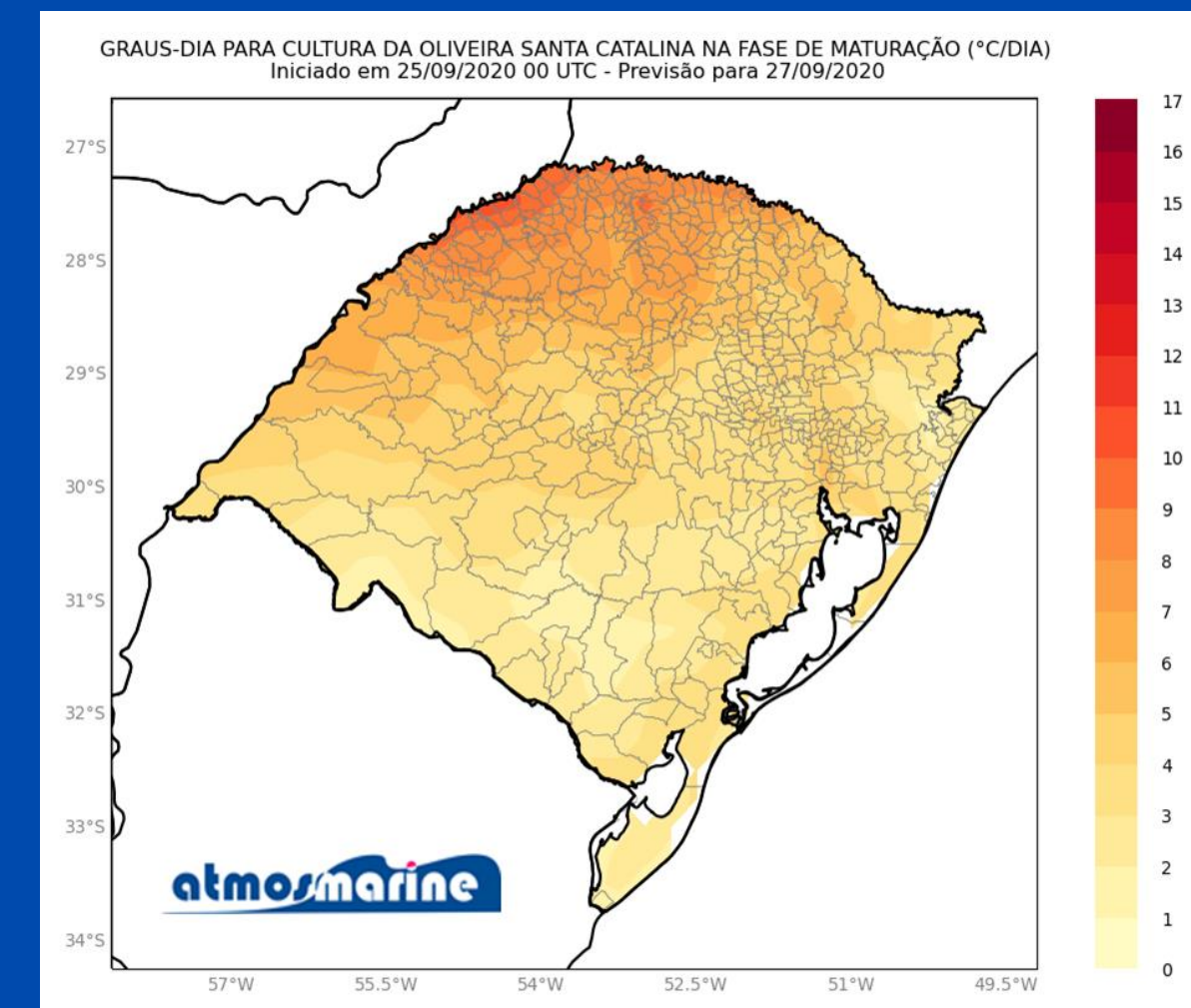
Degree-days:
number of
degrees that a
given crop needs
to complete the
subperiod from
sowing to
flowering

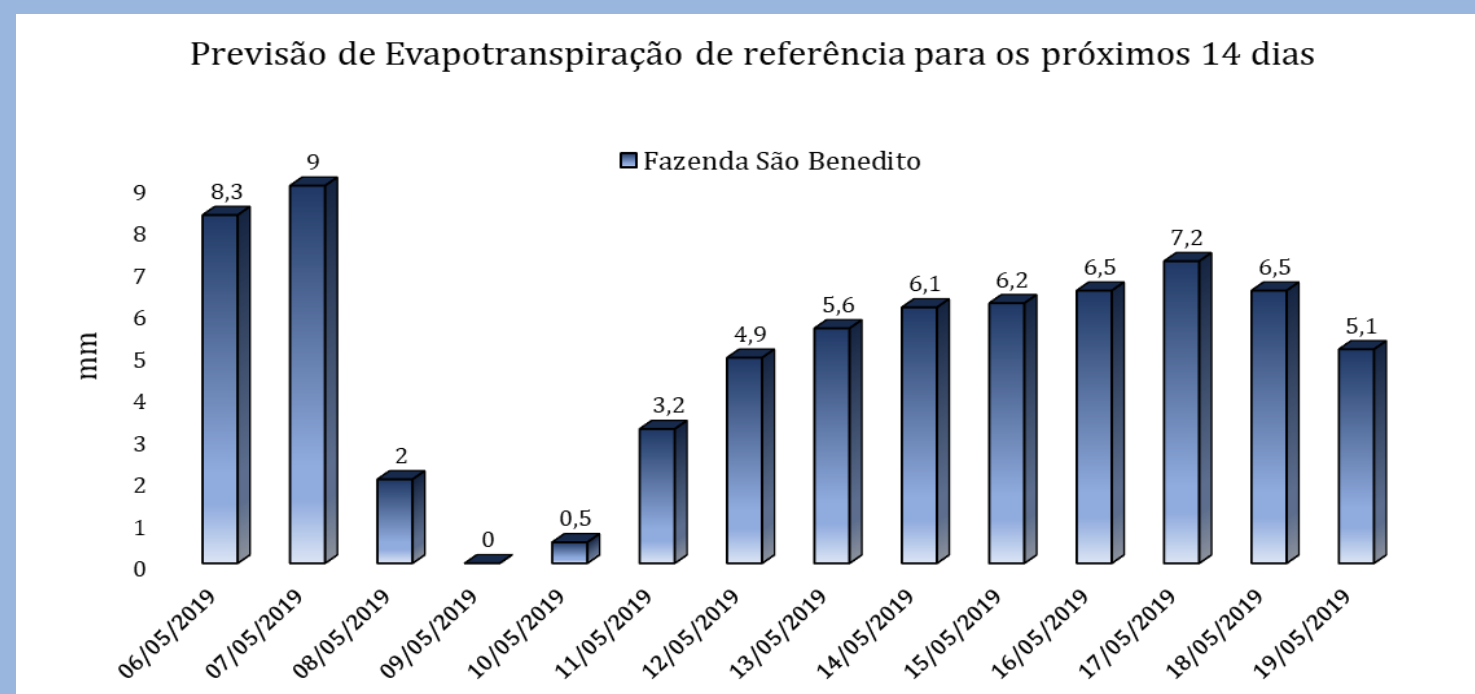
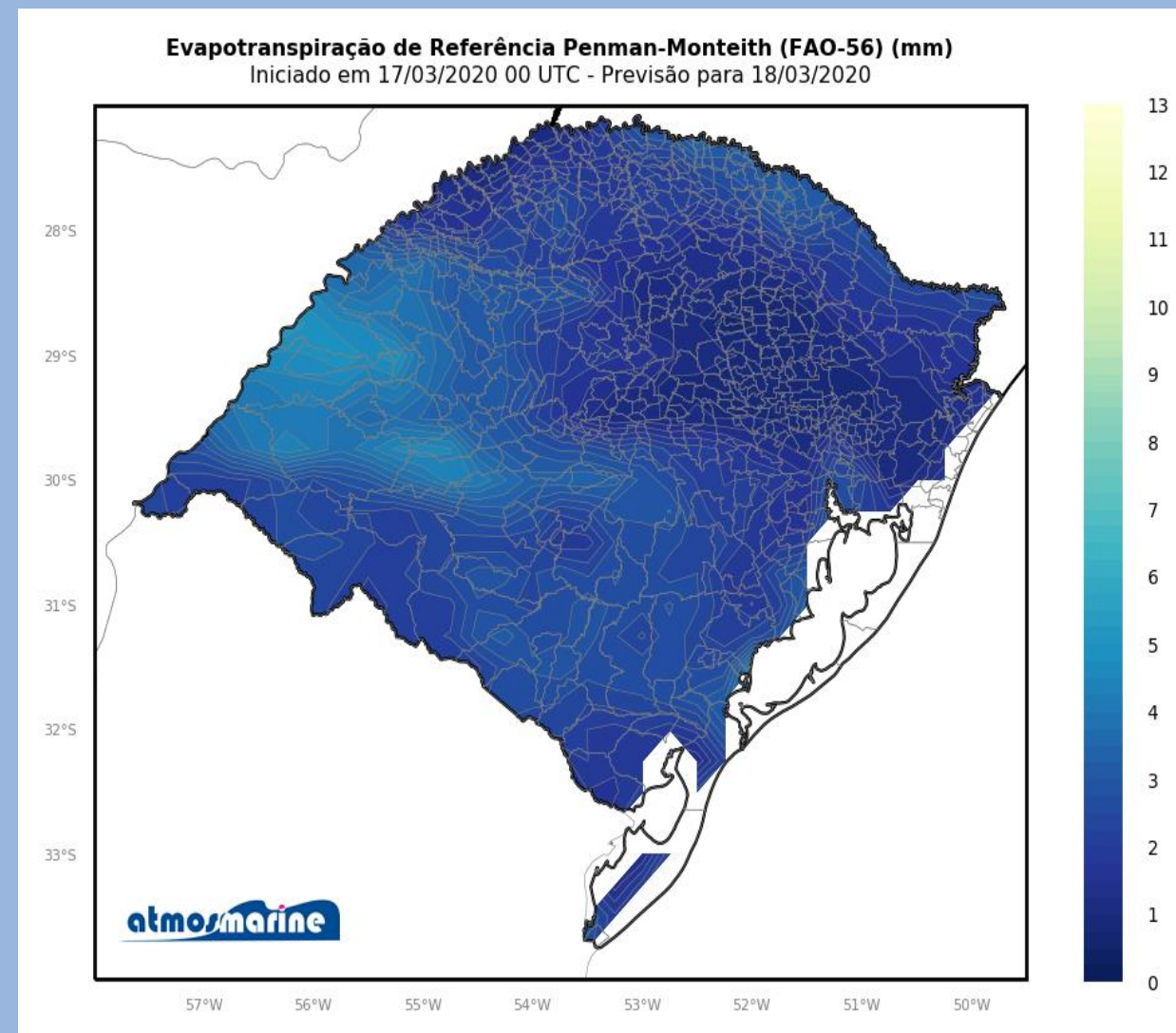
Products

The degree-day variable can also be calculated for each **growth phase of a crop**



E.g. Figures related to the different phases of olive





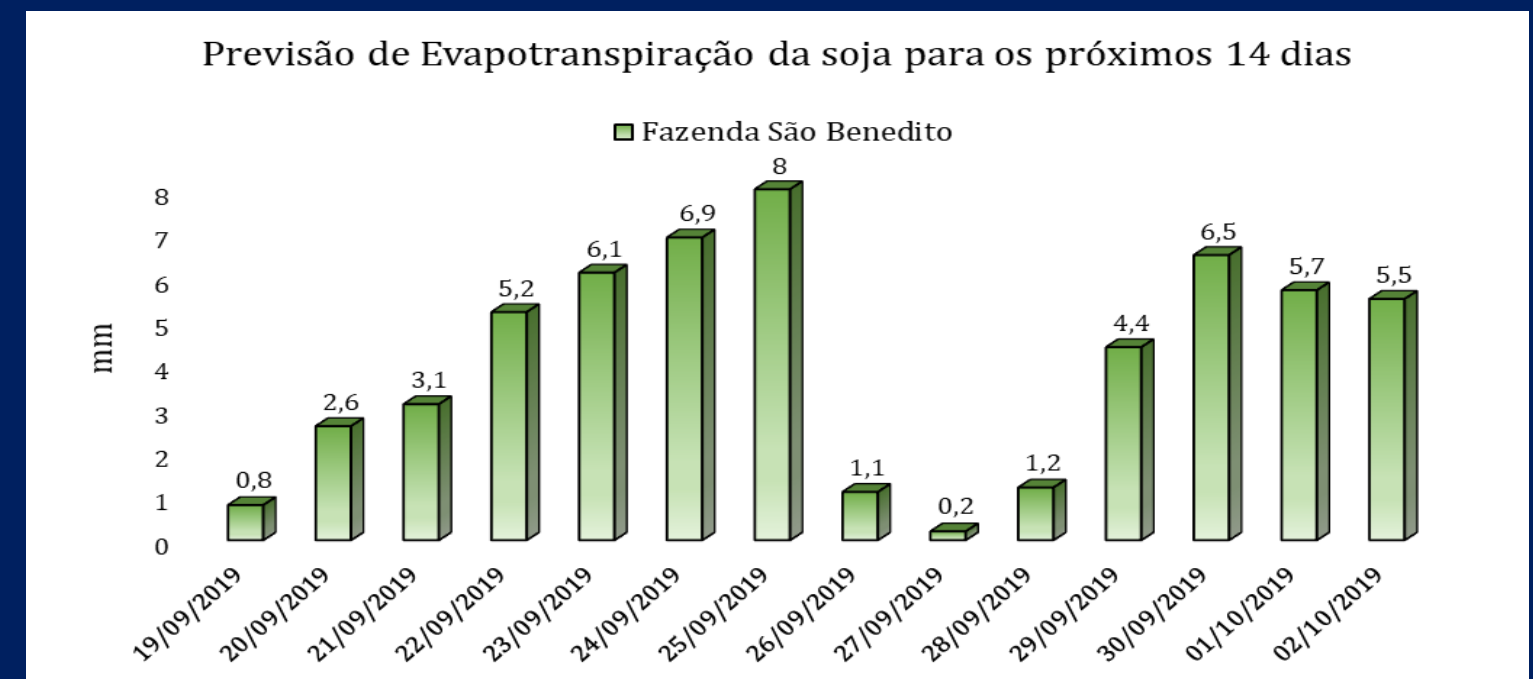
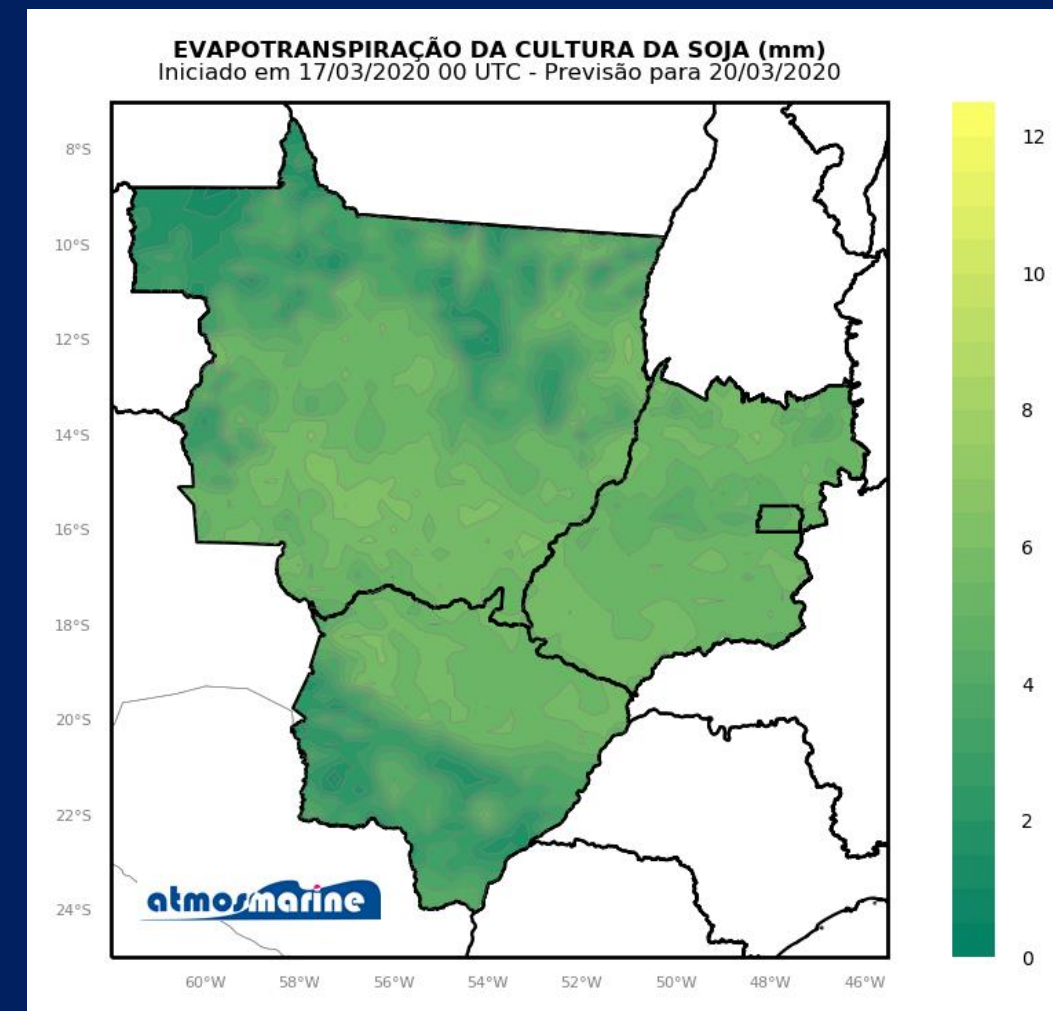
Products

**Reference
evapotranspiration**
is the amount of
water that would
hypothetically be
used by a grassy
surface

Hypothetical grass calculated to cover the soil, with a height between 8 and 15 cm in active growth, completely covering the soil surface, without water restriction.

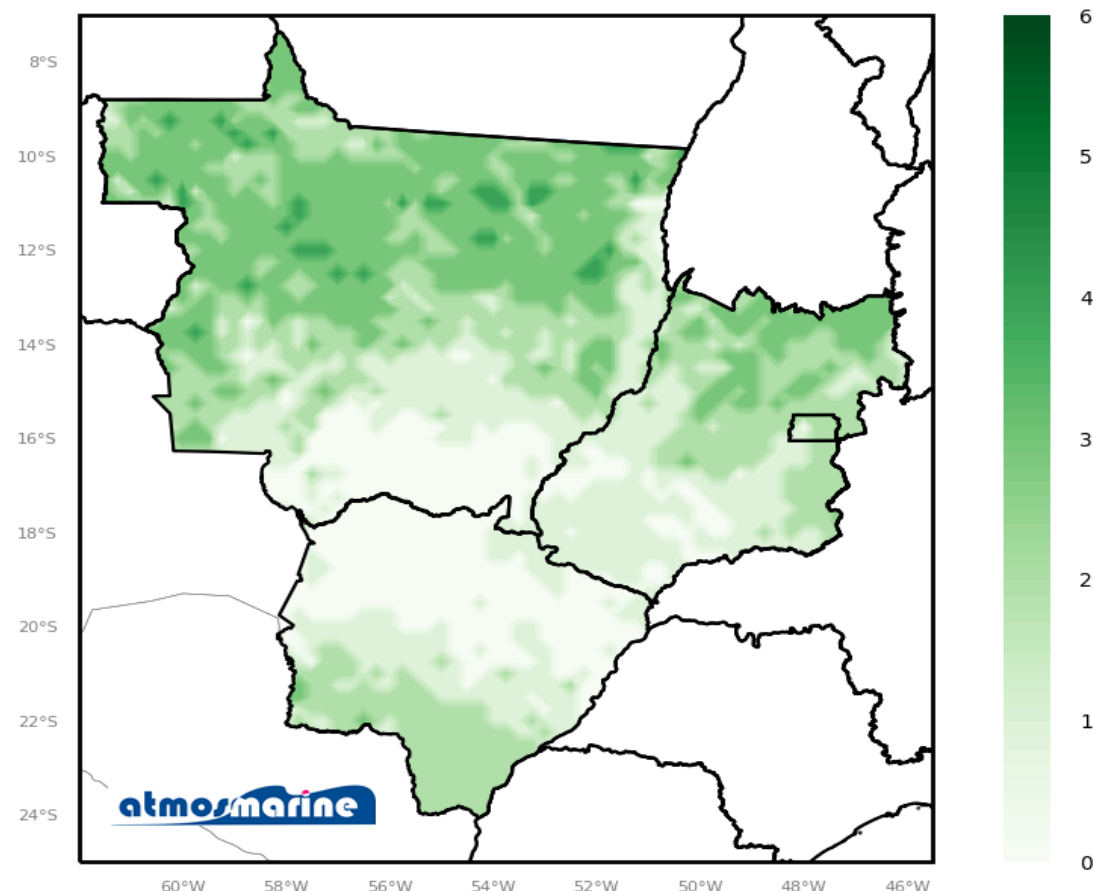
Products

**Evapo-
transpiration**
of cultures, is
the maximum
evapo-
transpiration
of cultures
with ideal
conditions

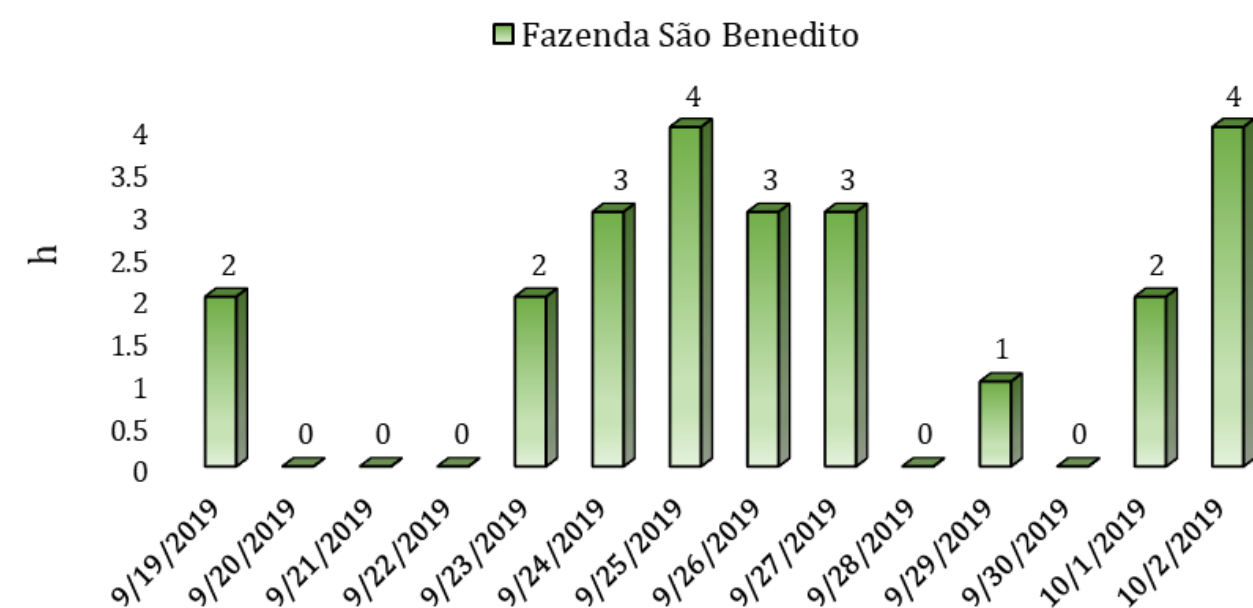


Ideal crop conditions means: disease-free, well-fertilized, grown in large fields, under optimal soil water conditions and reaching full production under the given climatic conditions

DURAÇÃO DO PERÍODO DE MOLHAMENTO FOLIAR (DPO) (H)
Iniciado em 17/03/2020 00 UTC - Previsão para 19/03/2020



Previsão de DPO da soja para os próximos 14 dias



DPO shows the number of hours in which the difference between the air temperature and the dew point temperature remained between the thresholds of 2 ° C (for dew deposition) and 3.8 ° C (for drying) .

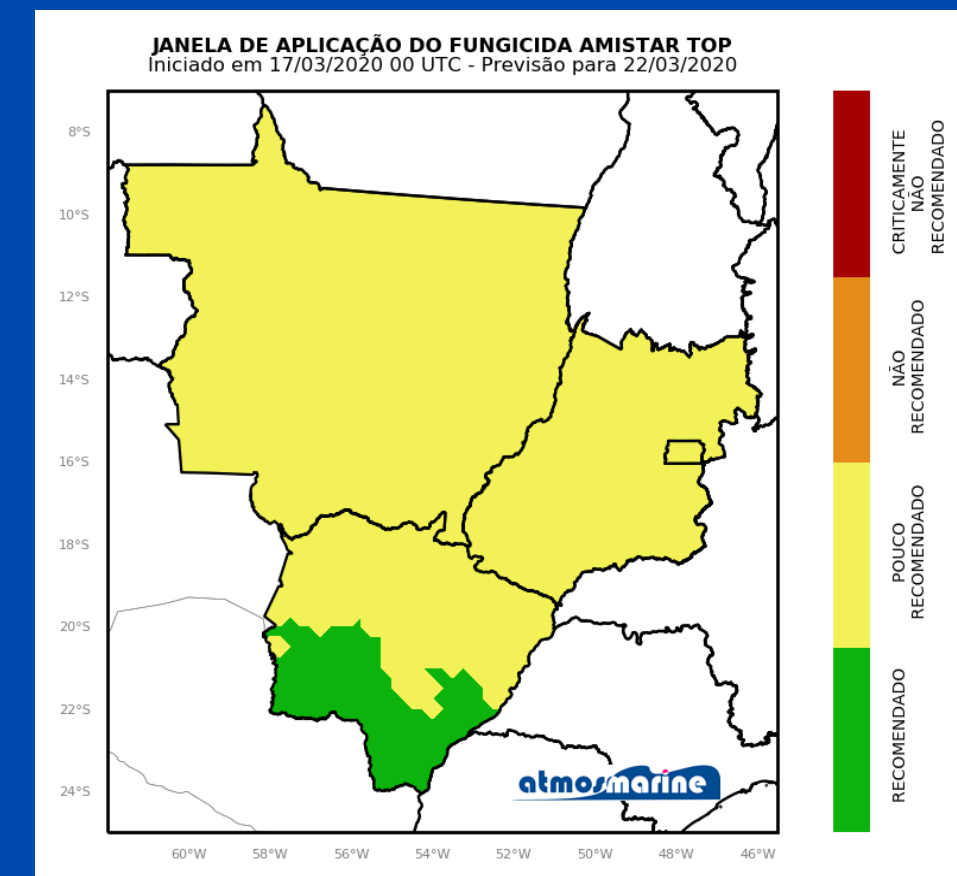
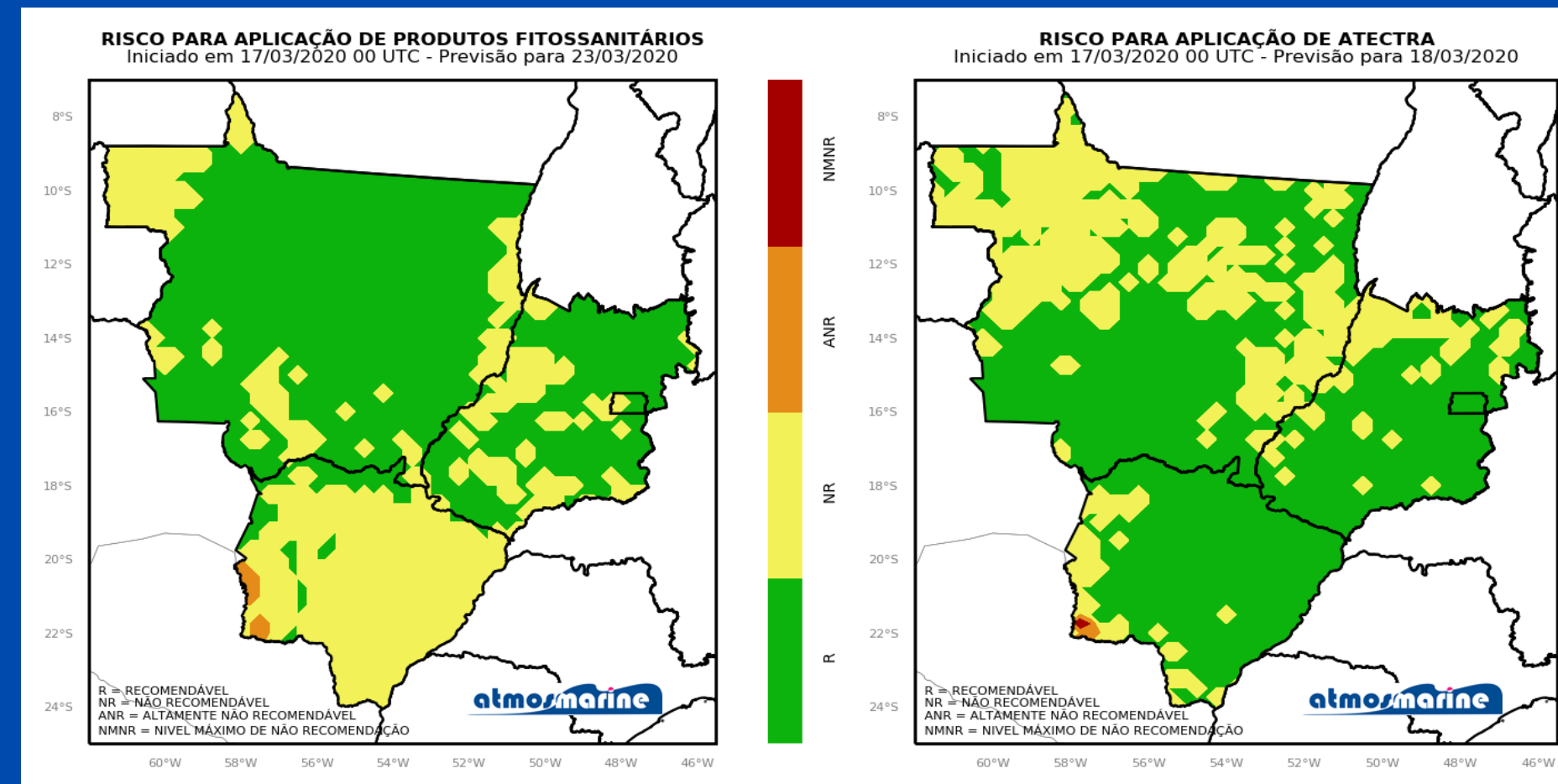
Products

**Depression of the
Dew Point
temperature**

**(DPO) represents
all forms of liquid
water on the leaf
surface derived
from the
formation of dew,
precipitation or
irrigation**

Products

Window period
displaying
determination
index for
herbicide
application



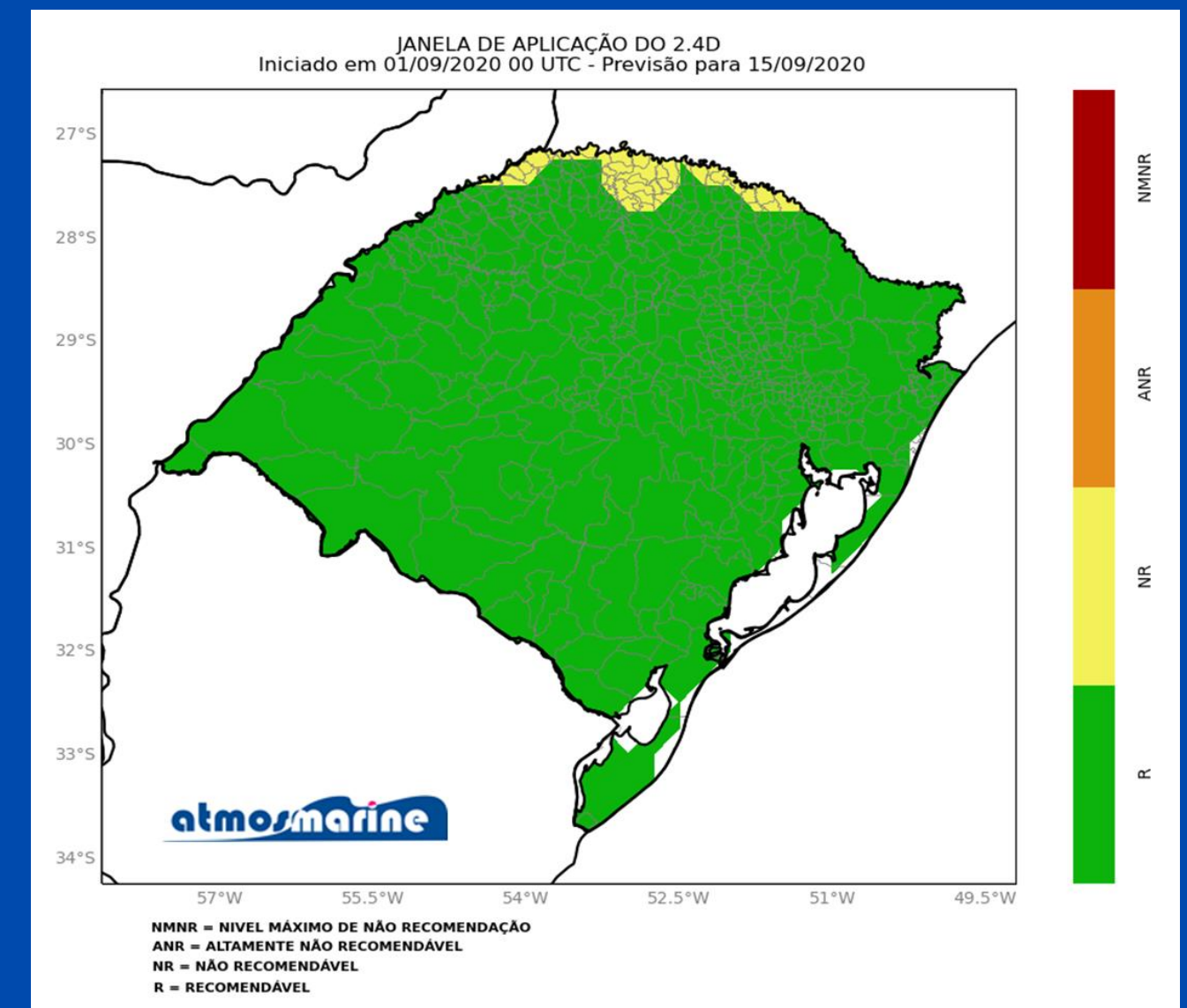
These indices use the values of the predicted meteorological variables to determine which is the best application period.

Products

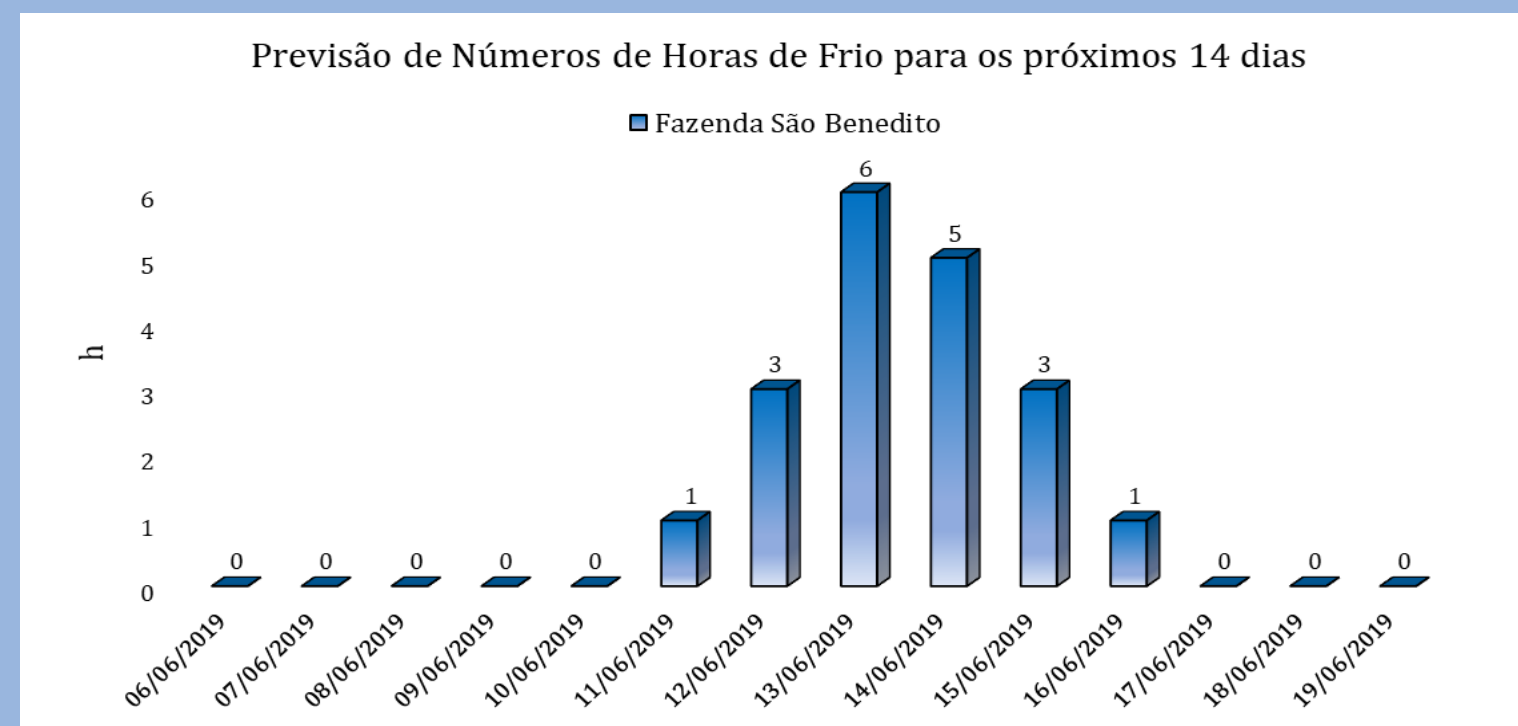
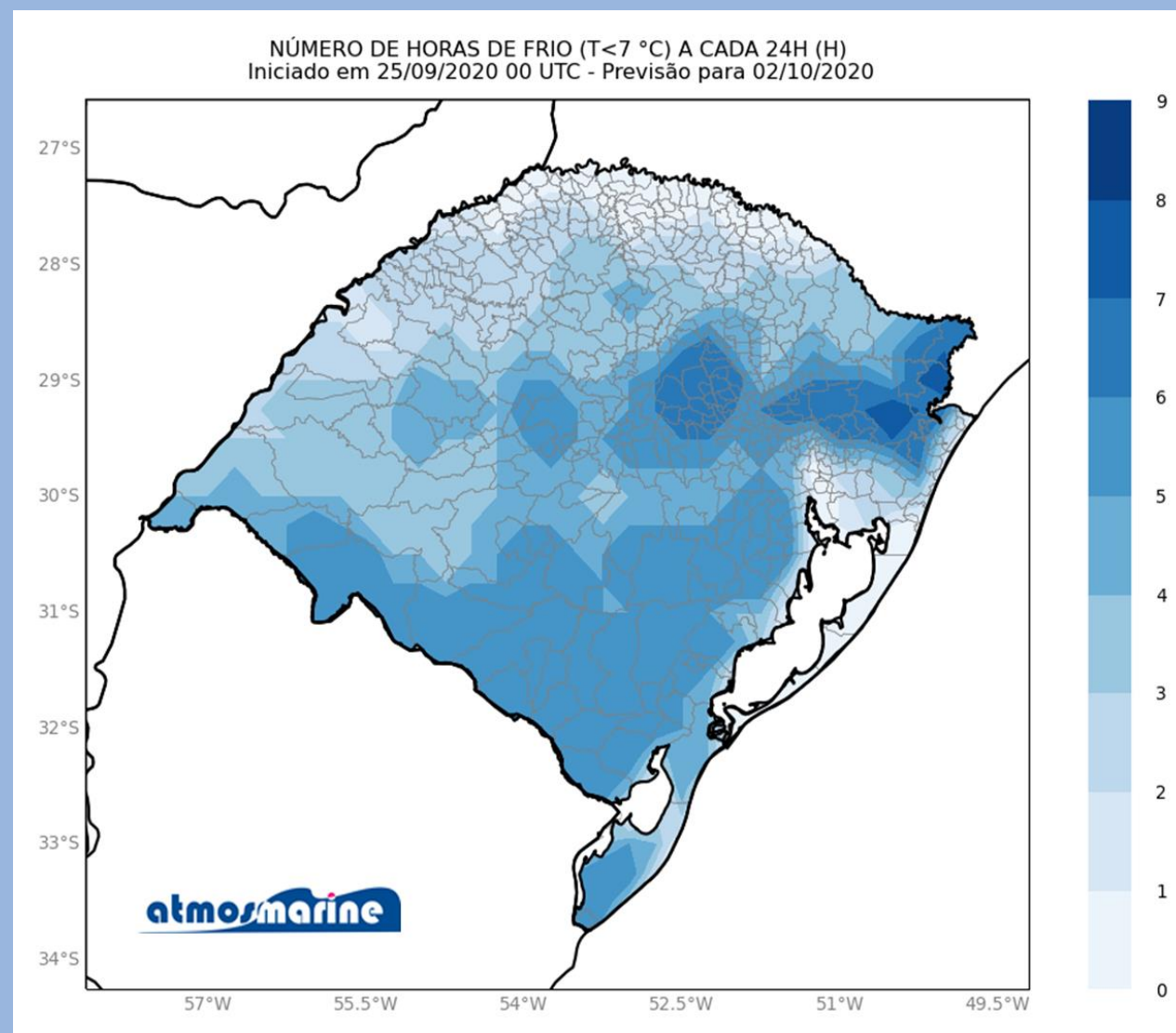
Other types
of window
determination
index graphs
for **herbicide
application**

| | Janela de aplicação do Atectra - Fazenda São Benedito | | | | | | | | | |
|---------------------|---|-----|------|------|-----|------|------|------|------|------|
| | 22/05/2019 | | | | | | | | | |
| | 08h | 09h | 10h | 11h | 12h | 13h | 14h | 15h | 16h | 17h |
| Janela de Aplicação | | | | | | | | | | |
| Temperatura | 19,2 | 21 | 22,1 | 23,5 | 26 | 28,6 | 29,3 | 30,5 | 27,1 | 24,3 |
| Umidade Relativa | 80 | 76 | 75 | 65 | 57 | 47 | 45 | 41 | 56 | 60 |
| Vento | 6,3 | 6,5 | 7,1 | 5,6 | 2,3 | 2,6 | 4,2 | 1,3 | 4,9 | 3,6 |

| | |
|--|----------------------------------|
| | Recomendável |
| | Não recomendável |
| | Altamente não recomendável |
| | Nível máximo de não recomendação |



These indices use the values of the predicted meteorological variables to determine which is the best application period.



For cryophilic species, the threshold considered is 7°C , while for other less demanding species, the threshold of 13°C will be considered.

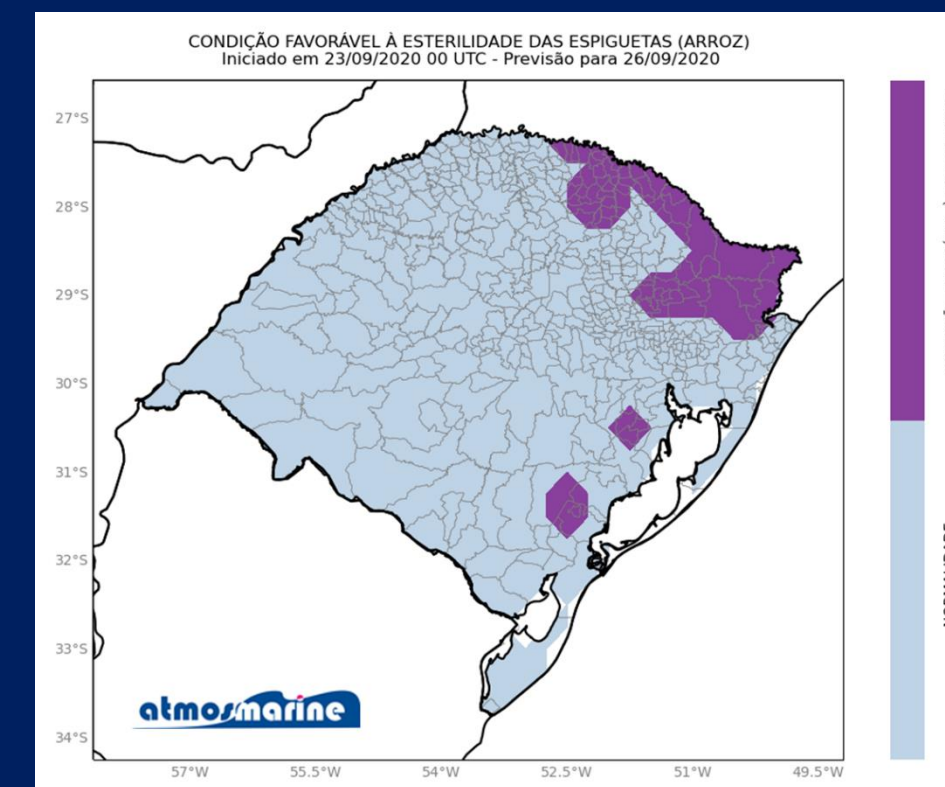
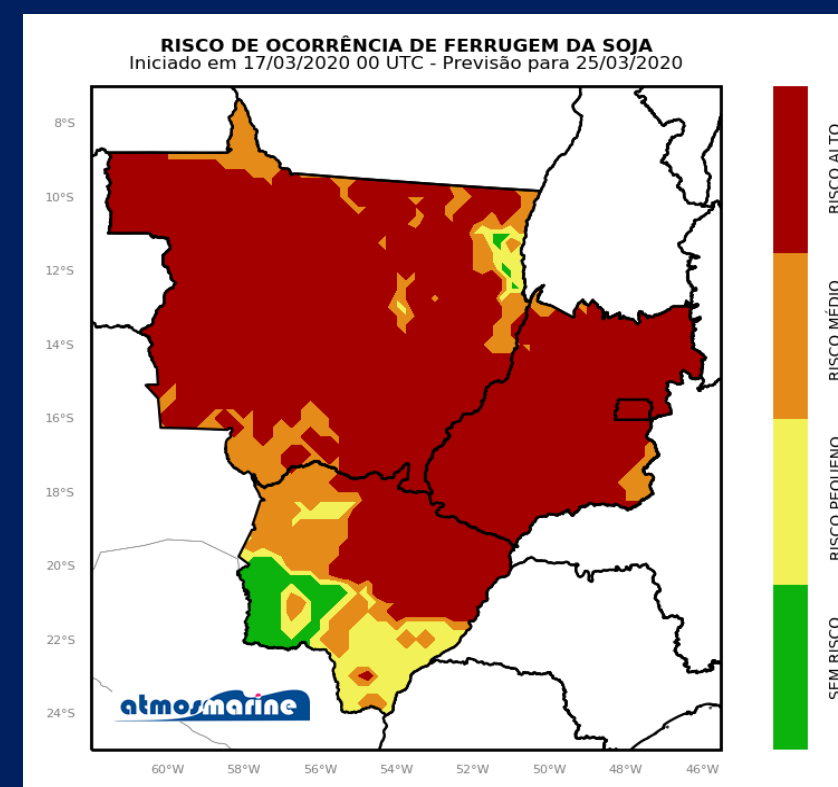
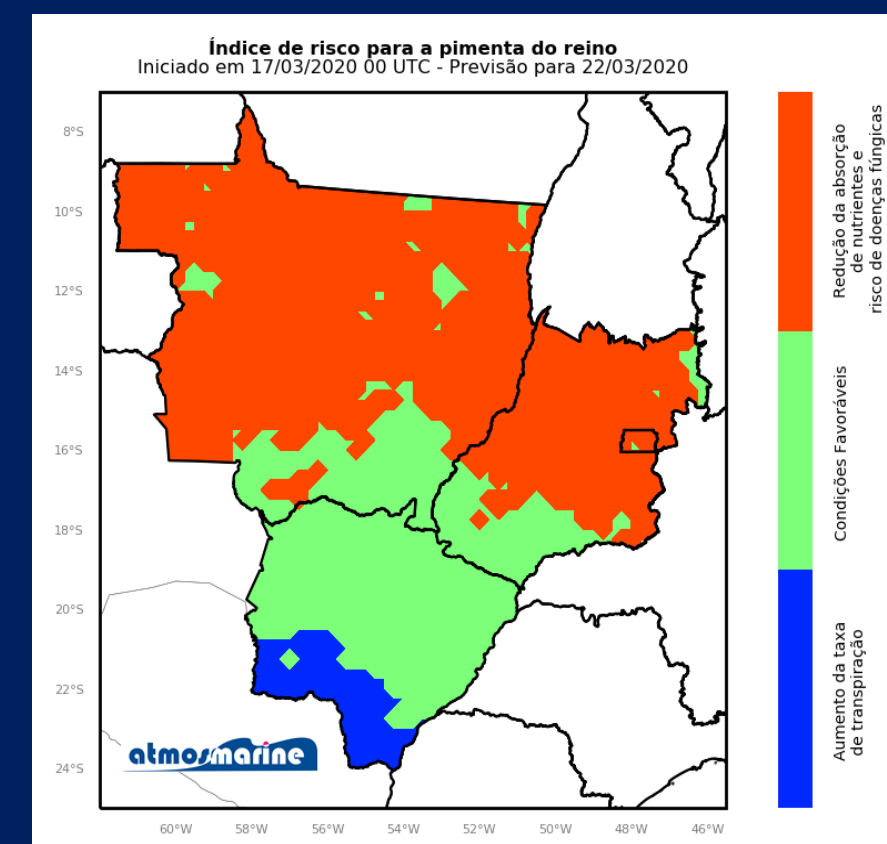
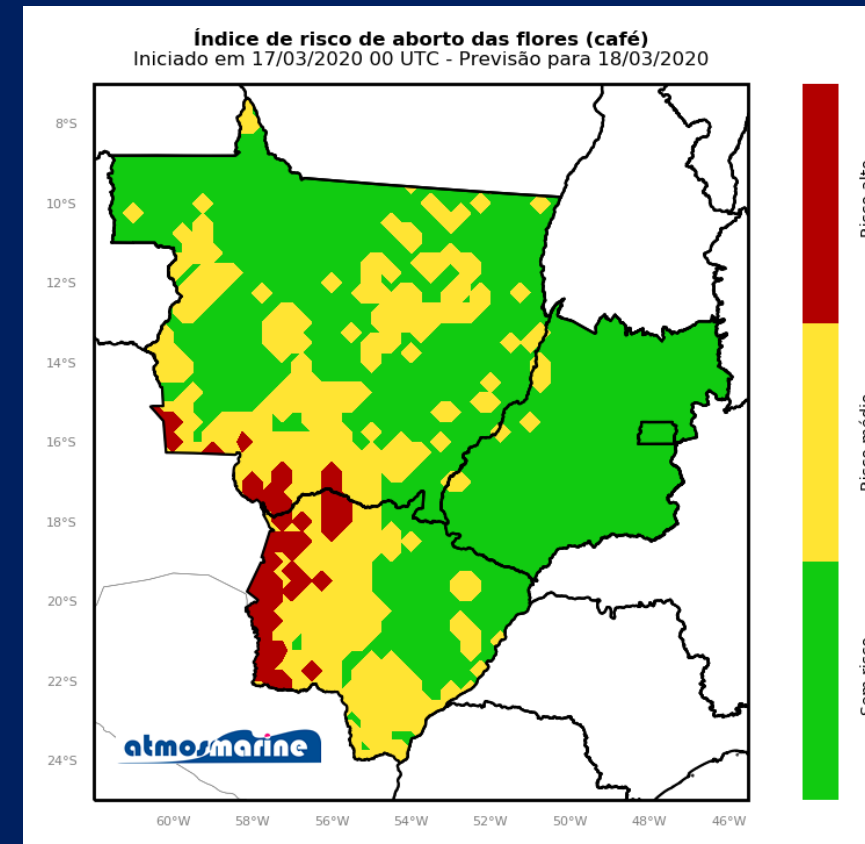
Products

Number of Cold Hours (NHF) is the time when the air temperature is below a certain threshold

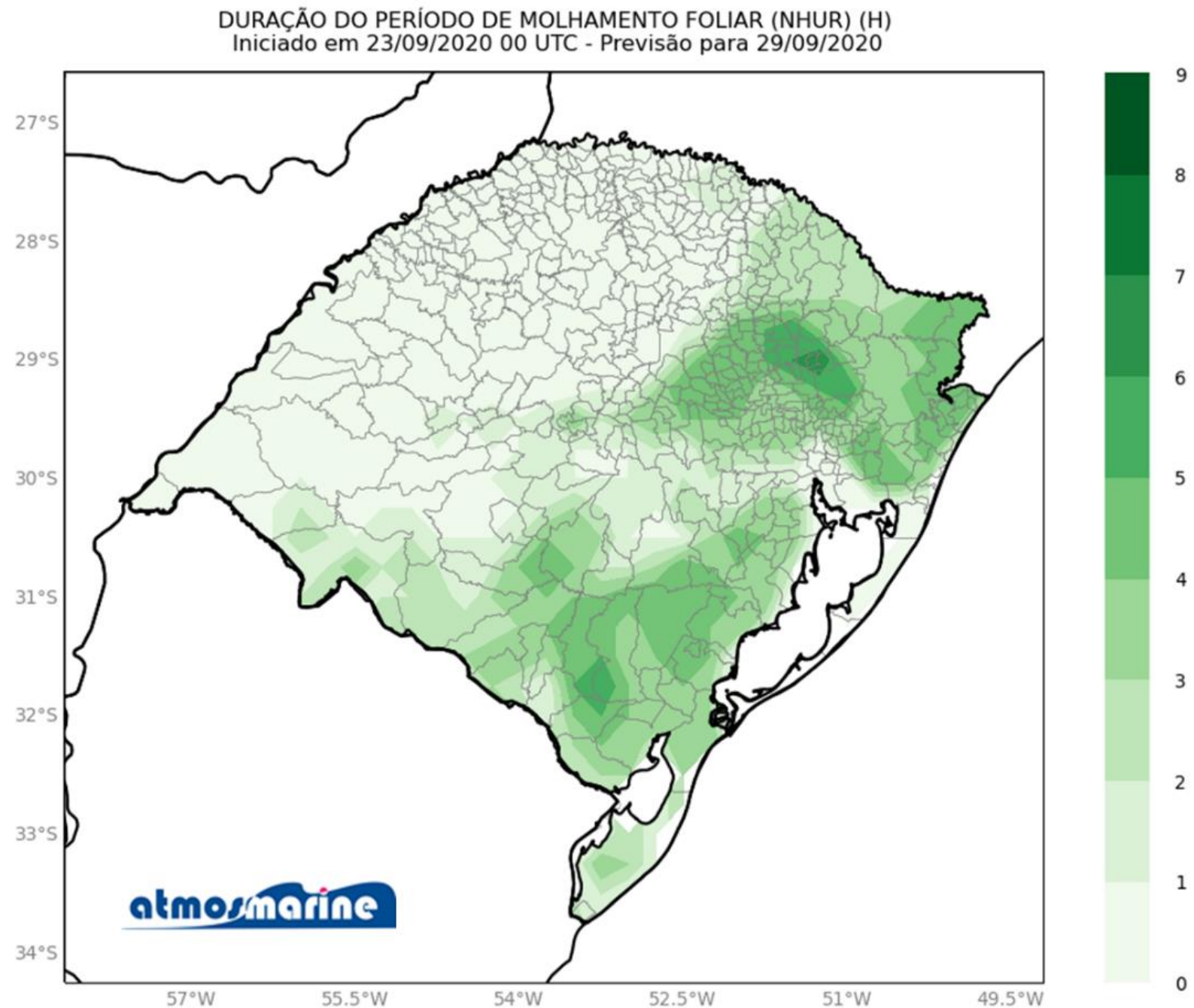
Products

Risks

Associated
with Specific
Cultures



Some examples are: minimal germination and low corn yield, sterility of rice ear, inhibition of photosynthetic activity, burns and damage to olive tree shoots, Asian soybean rust, among others.



NHUR_90% is an empirical model for estimating the duration of the leaf wetting period (DPM)

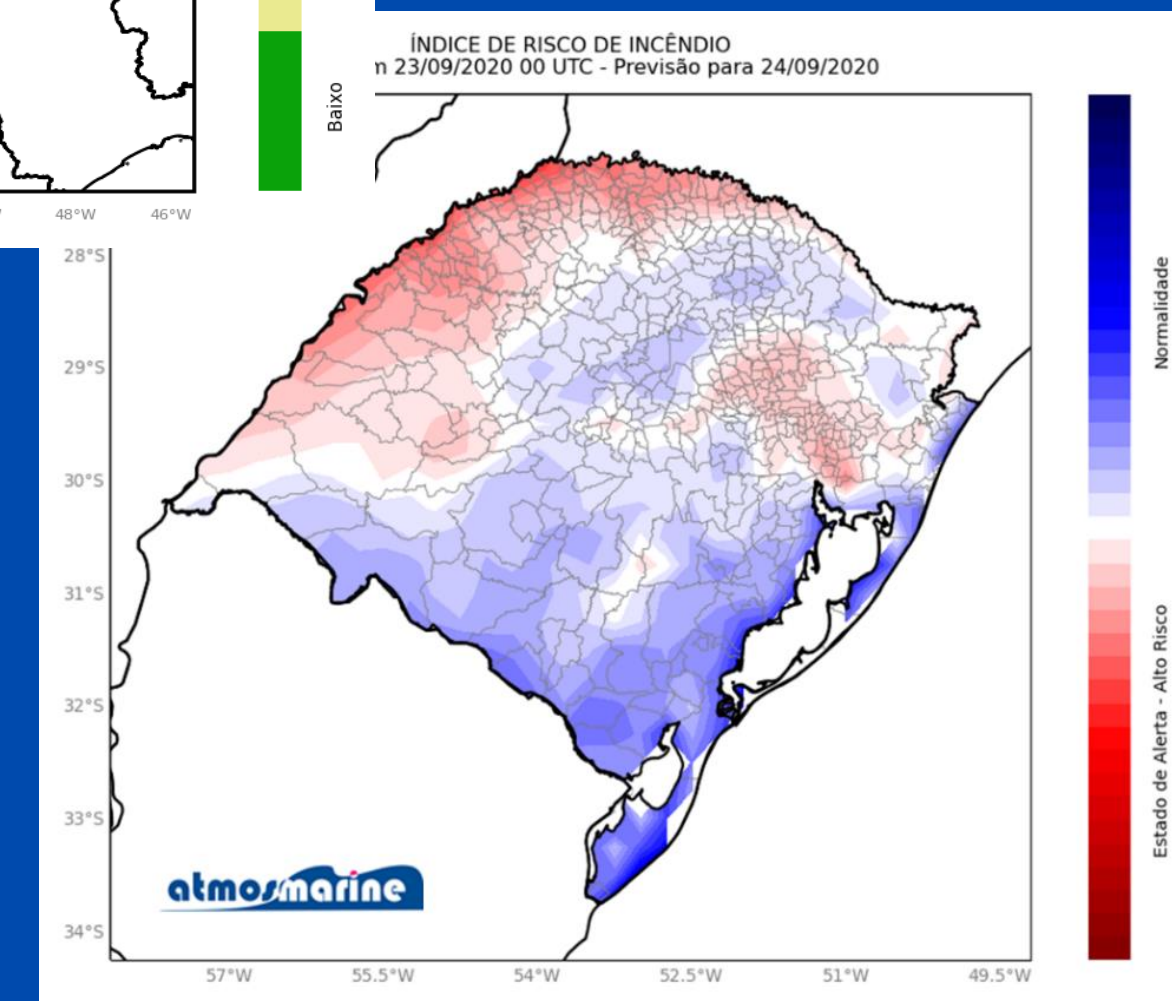
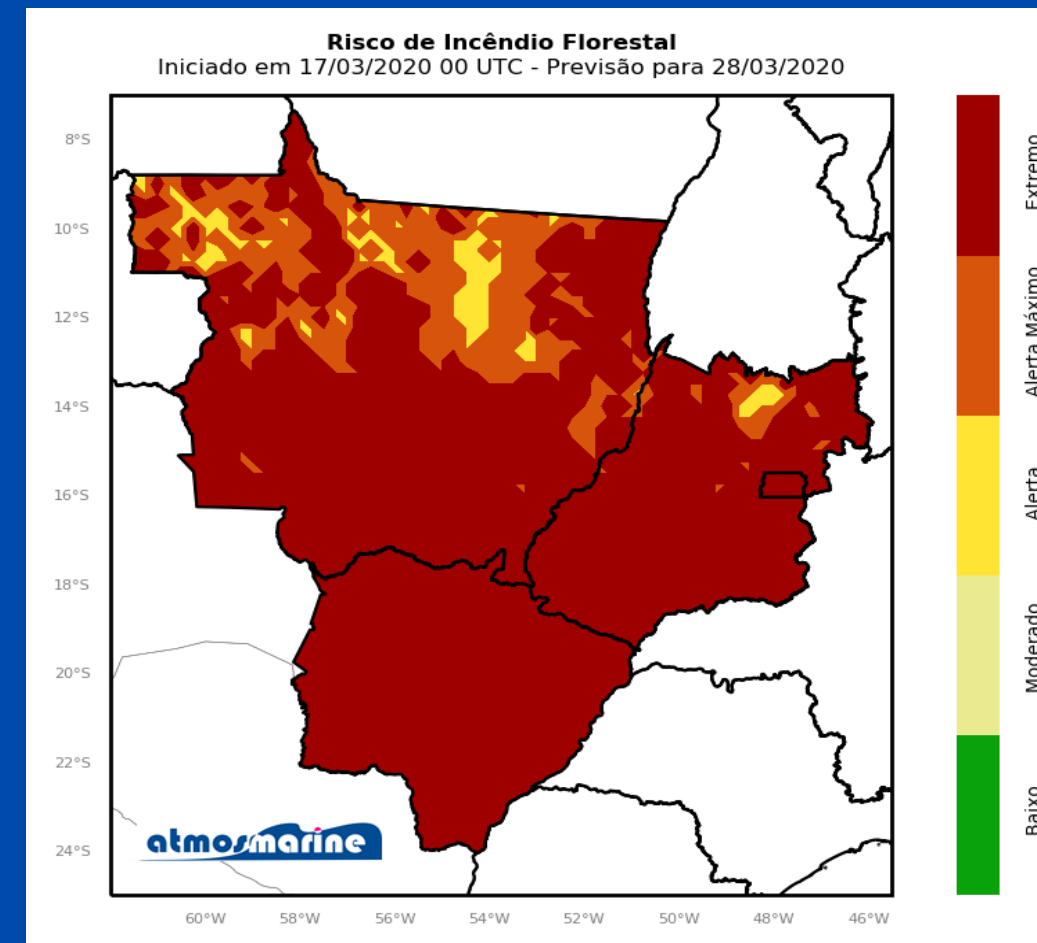
Products

Number of
Hours of
**Relative
Humidity**
above 90%
(**NHUR_90%**)

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Products

Risk
of
Fire



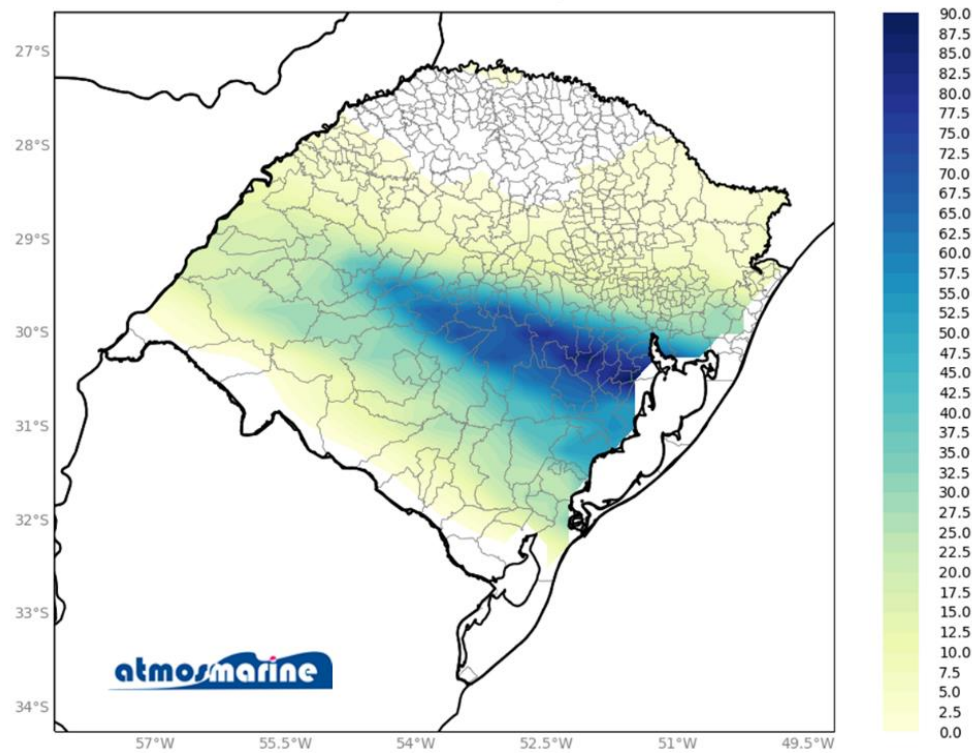
We predict the daily and / or hourly susceptibility of a given region to the occurrence of forest fires and, thus, making it possible to anticipate preventive measures.

Products

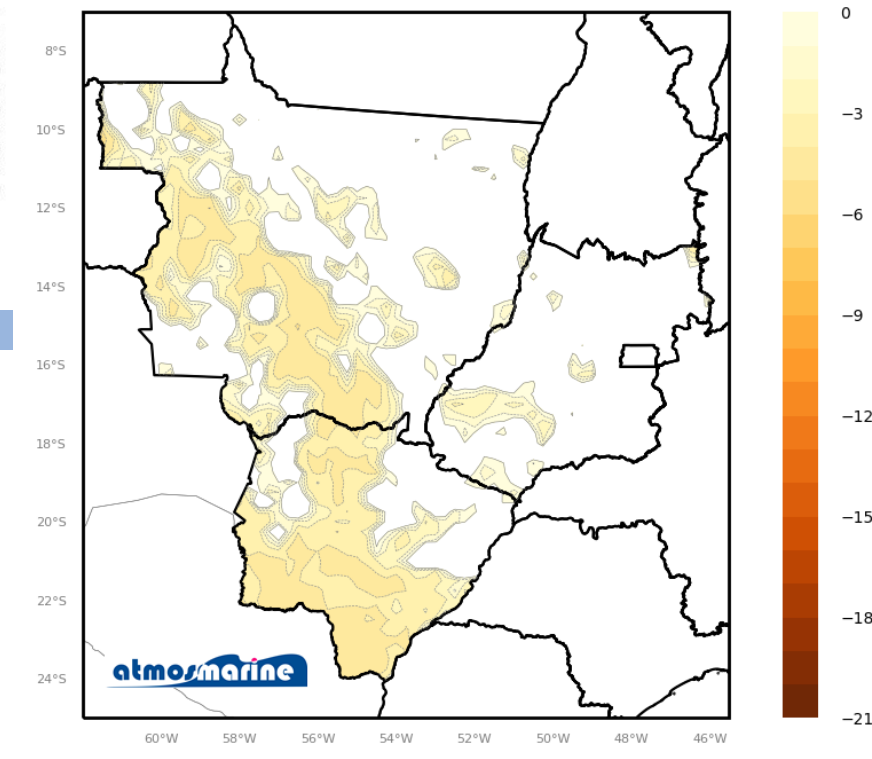
Climatic and Sequential Water Balance (BHC and BHS)

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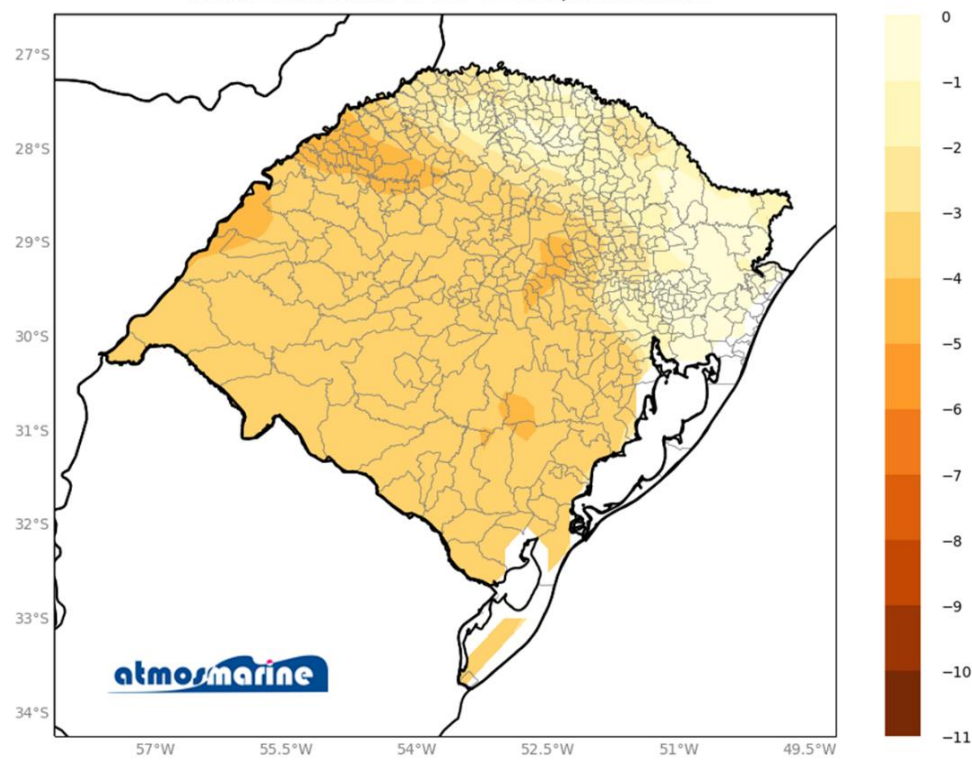
EXCEDENTE HÍDRICO (EXC) (MM)
Iniciado em 23/09/2020 00 UTC - Previsão para 02/10/2020



DEFICIÊNCIA HÍDRICA (mm)
Iniciado em 17/03/2020 00 UTC - Previsão para 31/03/2020



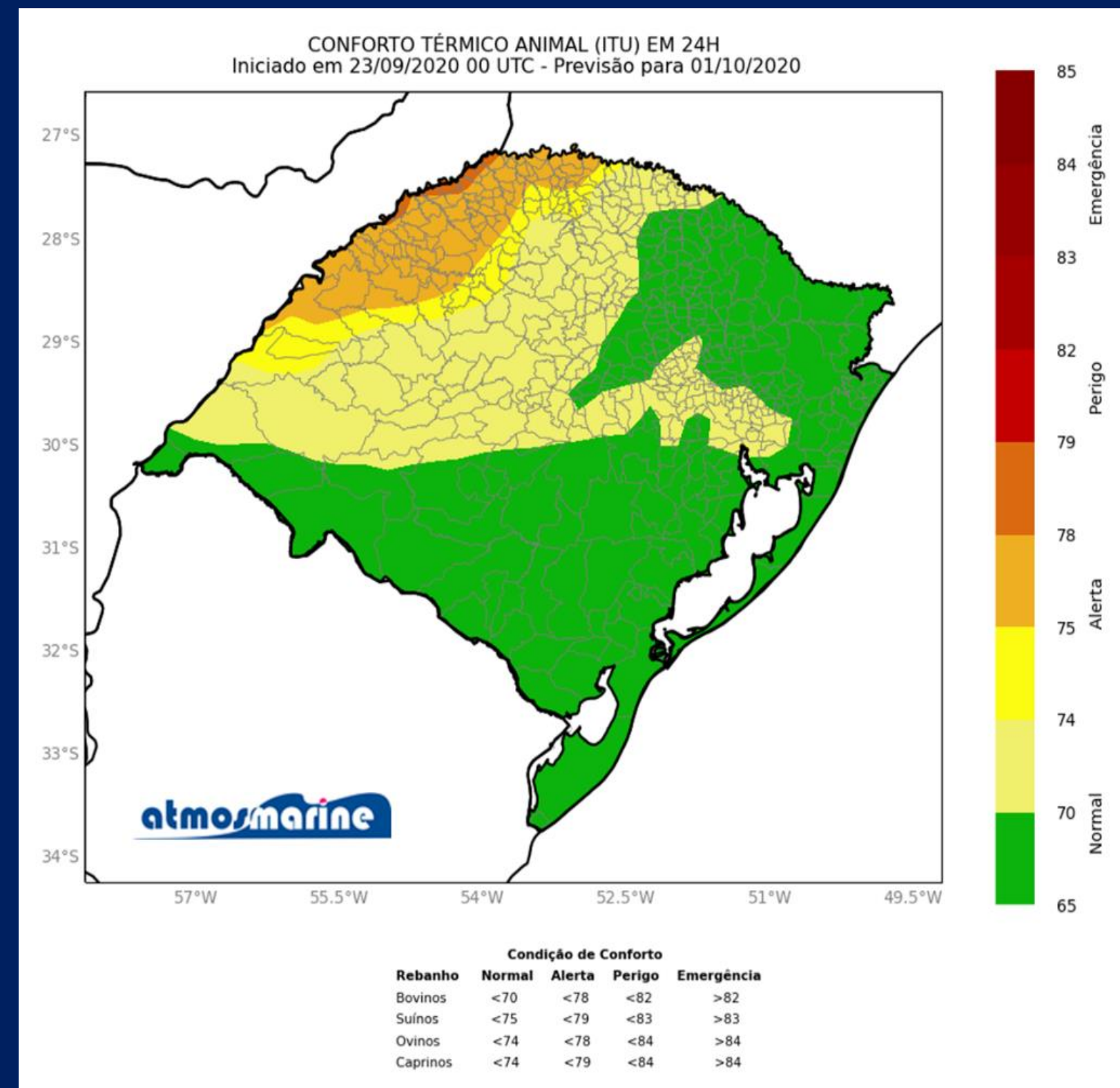
NEGATIVO ACUMULADO (MM)
Iniciado em 23/09/2020 00 UTC - Previsão para 28/09/2020



Estimation of amount of water in the soil calculated using the mass conservation principle. Examples: Water Deficiency, Water Storage in Volume, Water Surplus, Water Deficiency among others

Products

Thermal Index
(ITU) for
homeothermic
animals

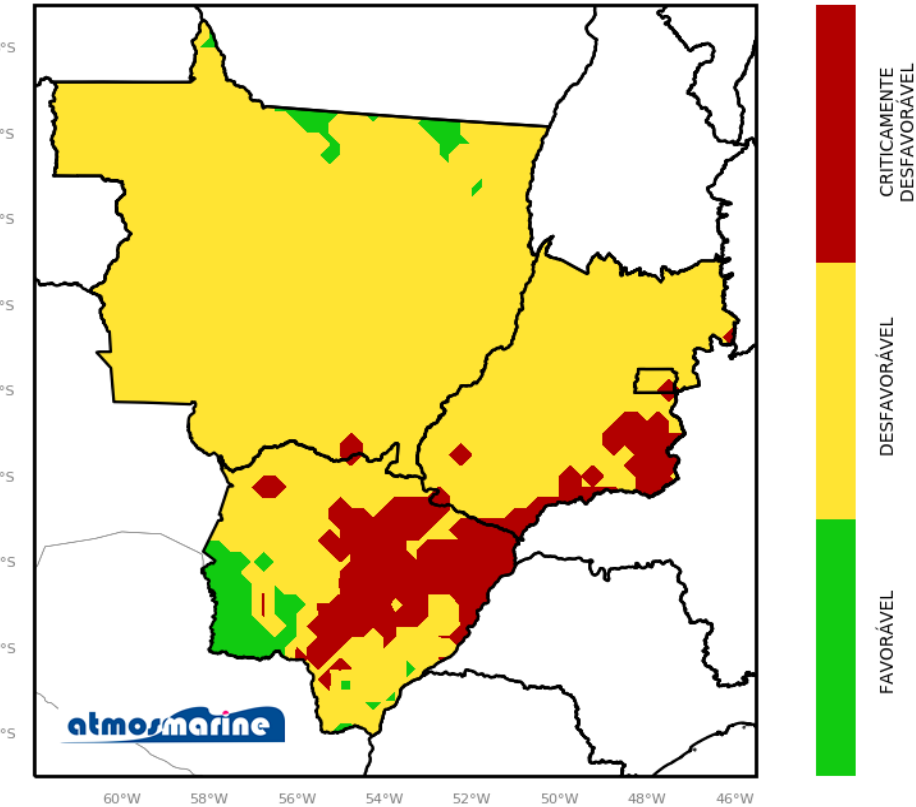


Some homeothermic animals are uncomfortable in unfavorable air temperatures, as their body temperature changes and can affect their productivity, health and food.

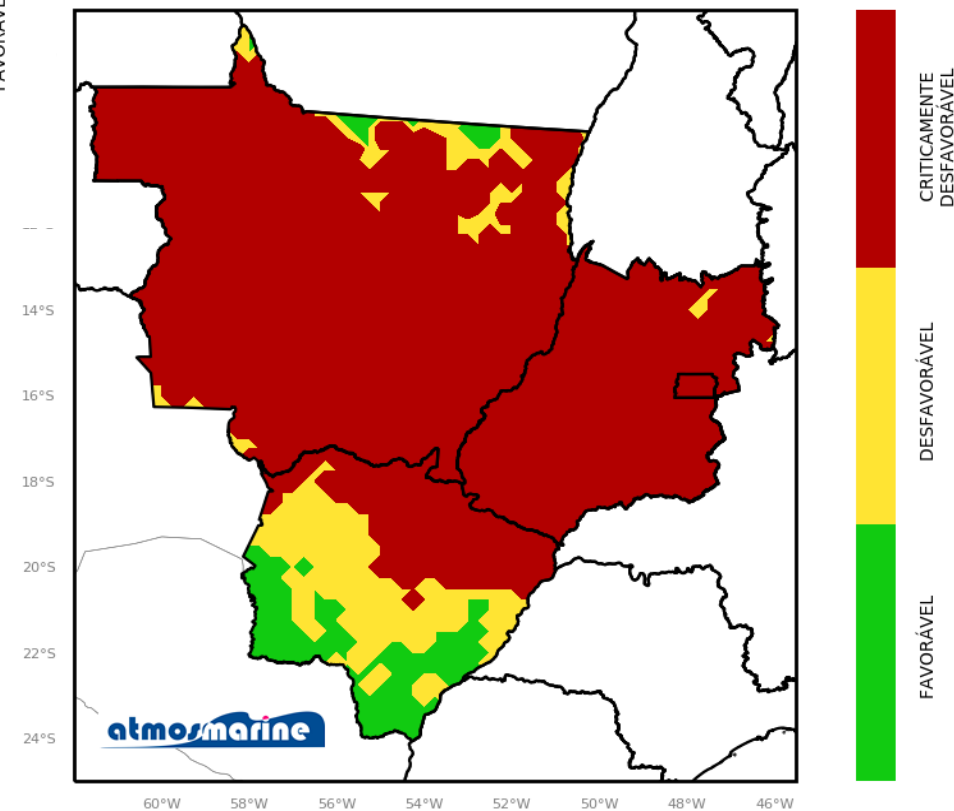
Products

Adequate
weather
conditions for
harvesting
and soil
management

CONDIÇÕES PARA REALIZAÇÃO COLHEITA
Iniciado em 17/03/2020 00 UTC - Previsão para 24/03/2020



CONDIÇÕES PARA MANEJO E CORREÇÃO DE SOLO
Iniciado em 17/03/2020 00 UTC - Previsão para 24/03/2020



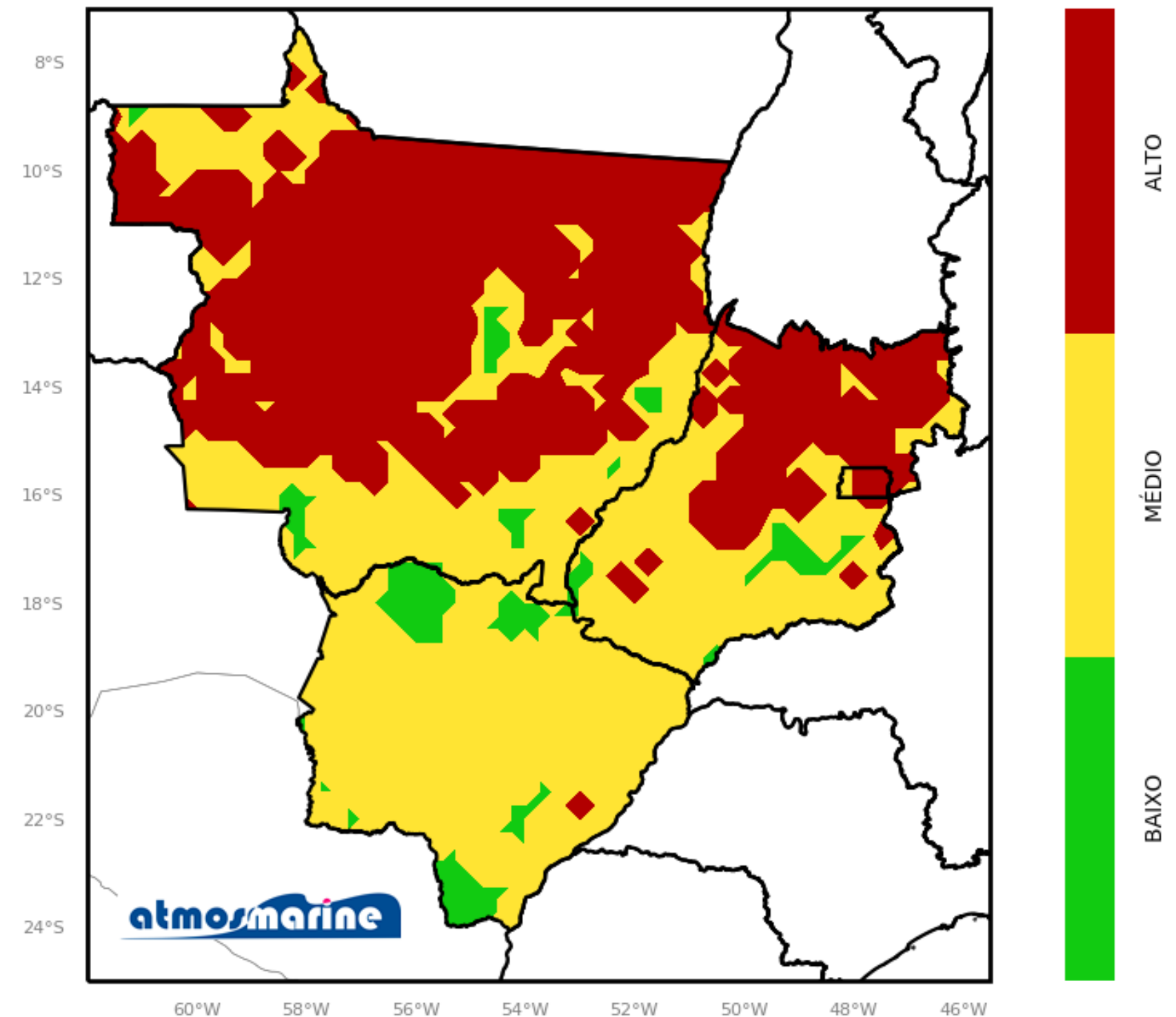
Using certain meteorological, agrometeorological variables, crop conditions and susceptibility, we can determine the best window and location for soil correction and management, and harvesting.

Products

Seasonal or
monthly

phenomena
forecasts


RISCO AGROCLIMÁTICO PARA A SAFRA DA SOJA
Iniciado em março/2020 - Previsão para maio/2020



The agroclimatic risk for the soybean crop is an example of a seasonal variable that can be predicted for a longer period.



Distinction

- ▶ **All employees are highly qualified with at least a master's degree.**
 - ▶ **AtmosMarine is still a small company, which means that costs are lower and customer support is more personalized and constant.**
 - ▶ **We offer and build customized solutions for each project. We don't deliver anything "pre-made".**
- 

Clients



Sistema de
Meteorologia e
Hidrologia do
Estado de Goiás
SIMEHGO



StormGeo



ThyssenKrupp



atmosmarine



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