

Integrare i dati satellitari e le previsioni stagionali per un innovativo servizio climatico agricolo: il caso della produzione di foraggio in Italia

Synergizing earth observations and seasonal forecasts within an innovative climate index: the case of forage production in Italy

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TERRA
CLIMATE SERVICE FOR RESILIENT AGRICULTURE

TERRA is a Software-as-a-Service (SaaS) risk assessment and monitoring tool based on a climate-enhanced vulnerability index. Such an index seamlessly integrates satellite data, reanalysis products and seasonal forecasts.

In particular, it will combine the level-2 variables from sentinel 1, 2 and 3, available through the Copernicus Global Land Service, in a unified vulnerability index, that will be integrated with the reanalysis products and seasonal forecasts available through the Climate Data Store of the Copernicus Climate Change Service.

TERRA will exploit the data of Sentinel 1, 2 and 3 to estimate the vulnerability of a given area. The following level-2 variables, available through the Copernicus Global Land Service, are considered and integrated within a unified vulnerability index and a climate enhanced vulnerability index.

WITH TERRA you can:

- Choose among different data to view
- Display data on the map
- Explore data point on the map
- View time series in a graph
- View time series in a table
- Download data in different formats
- Download visualisation in different formats

Monitoring for Growing
2017-01-10

● low risk ● medium risk ● high risk
Zoom in or click on the data points to see more details

Coordinates: 12.690 43.833
EVIFOC: -1.28
risk level: safe

Enhanced Vulnerability Index Forecasted Crop
coordinates 12.690 43.833 timeseries of 36 points

risk level

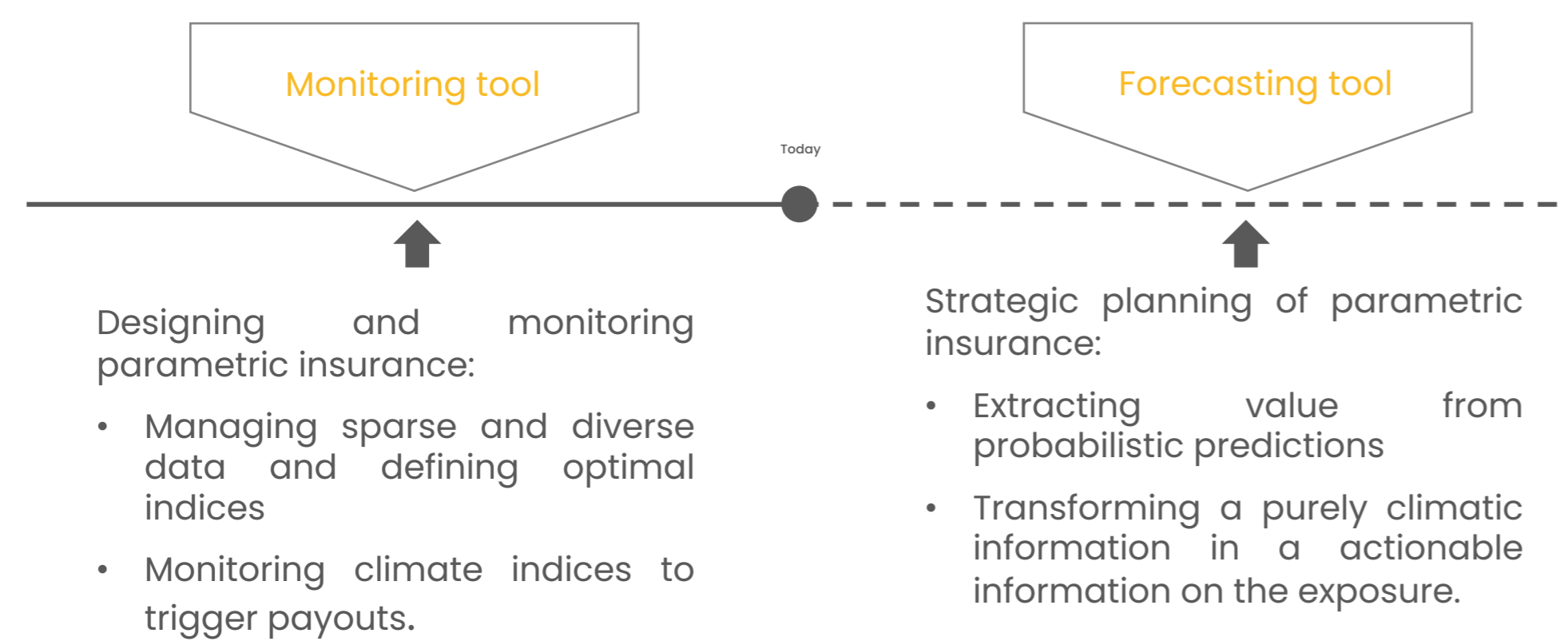
time

time evifoc level

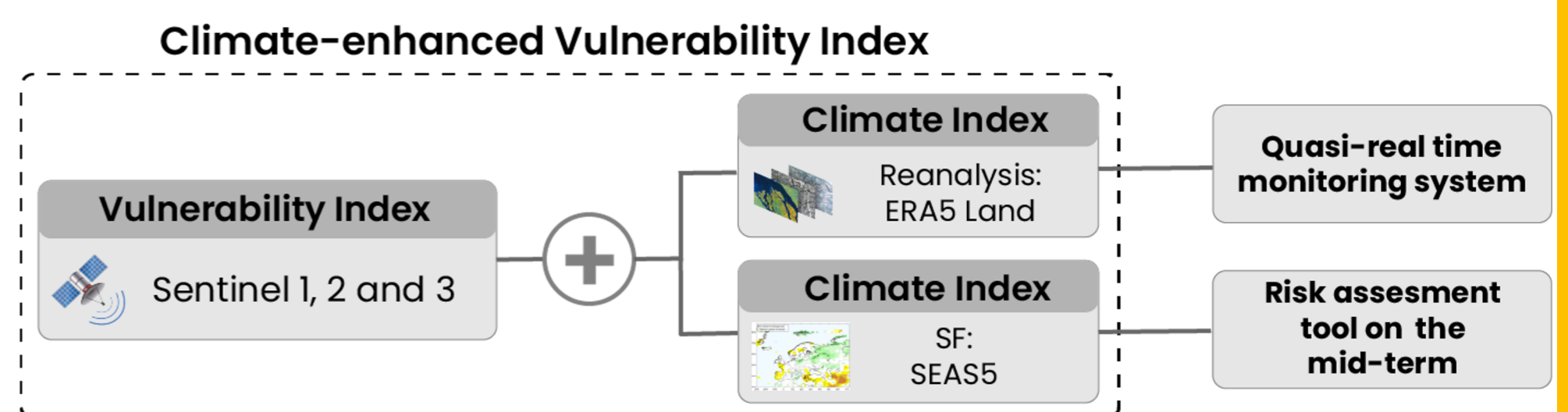
time	evifoc level
2017-01-10	-2.144761697
2017-01-20	-0.6537579998

CUSTOMER NEEDS

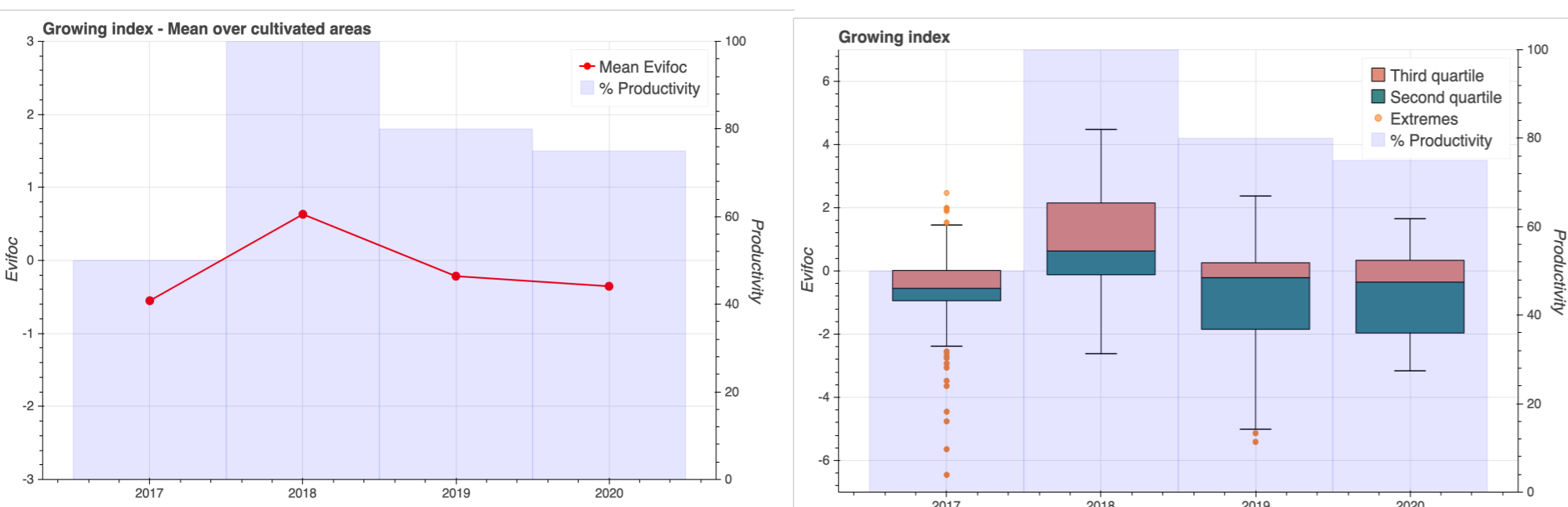
Parametric insurance: pre-specified payouts based upon a trigger event linked to a climate index.



CEVI FRAMEWORK



VALIDATION OF CEVI



VALIDATION OF FORECASTING SYSTEM

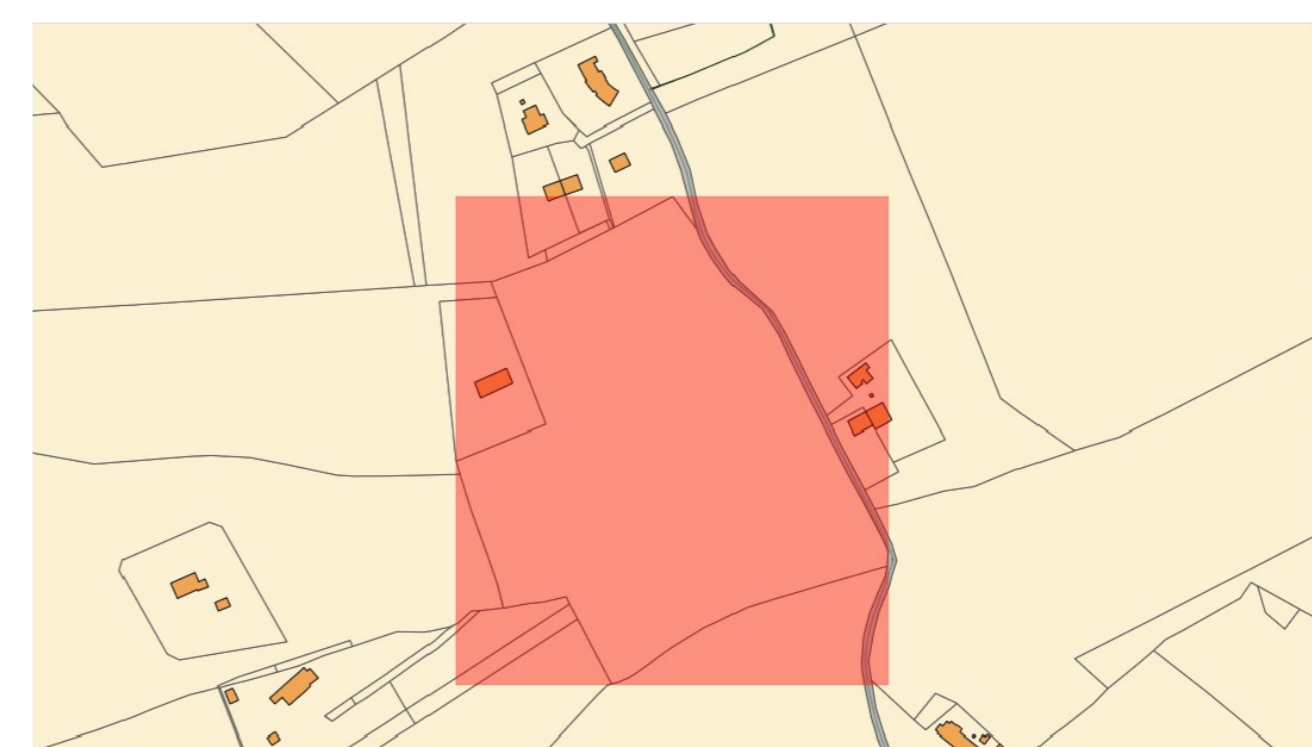
Month	Accuracy					Sensitivity					Specificity				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1	0.61	0.64	0.52	0.44	0.54	0.47	0.36	0.31	0.47	0.47	0.66	0.74	0.59	0.43	0.56
2	0.51	0.6	0.44	0.48	0.52	0.68	0.46	0.4	0.29	0.62	0.44	0.65	0.46	0.55	0.48
3	0.64	0.52	0.59	0.55	0.62	0.52	0.53	0.52	0.4	0.76	0.65	0.52	0.63	0.61	0.54
4	0.51	0.58	0.55	0.48	0.52	0.32	0.46	0.41	0.57	0.7	0.58	0.62	0.6	0.45	0.54
5	0.48	0.63	0.5	0.56	0.46	0.7	0.45	0.27	0.34	0.4	0.35	0.73	0.64	0.69	0.49
6	0.5	0.51	0.49	0.51	0.52	0.42	0.42	0.27	0.31	0.44	0.55	0.55	0.6	0.61	0.56
7	0.55	0.48	0.58	0.43	0.48	0.52	0.55	0.47	0.52	0.62	0.56	0.45	0.64	0.39	0.41
8	0.52	0.45	0.6	0.62	0.47	0.54	0.41	0.45	0.36	0.26	0.52	0.47	0.67	0.74	0.57
9	0.61	0.55	0.46	0.5	0.47	0.47	0.3	0.26	0.5	0.56	0.65	0.64	0.53	0.51	0.45
10	0.52	0.49	0.59	0.41	0.48	0.47	0.51	0.32	0.29	0.27	0.55	0.48	0.71	0.46	0.57
11	0.56	0.54	0.57	0.52	0.52	0.38	0.27	0.47	0.62	0.18	0.64	0.66	0.61	0.47	0.67
12	0.59	0.5	0.61	0.51	0.59	0.65	0.57	0.57	0.54	0.58	0.56	0.46	0.62	0.49	0.59

VALIDATION OF FORECASTING SYSTEM

- The forecasting system captures the year with the lowest production, predicting a high risk.
- Possible limitations related to using the same vegetation data over a long time window.

Month	Leadtime				
	1	2	3	4	5
2	1	0	0	1	1
3	1	1	1	0	1
4	1	1	1	0	1
5	2	1	1	1	0
6	2	2	1	1	1
7	1	2	2	1	1
8	1	1	2	2	1
9	1	1	1	2	1

ZOOMING IN ON ALFALFA PLOTS



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