Surveillance of disease emergence in dairy cattle using reproduction data

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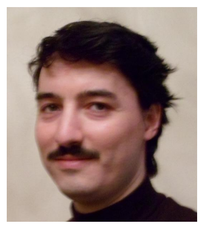
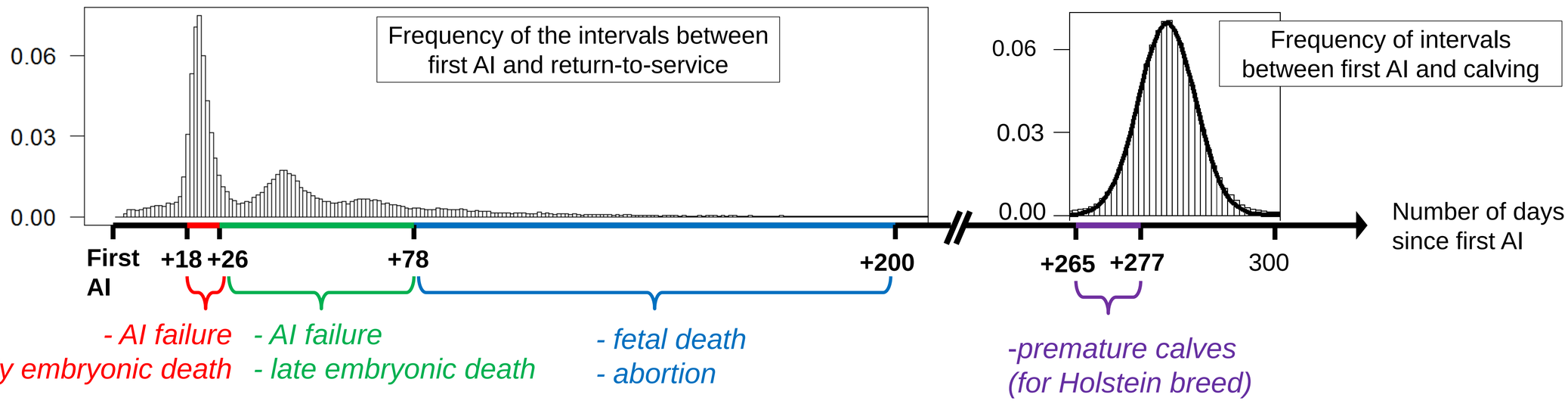


A system detecting symptoms is needed to reduce future epidemic damages in Europe

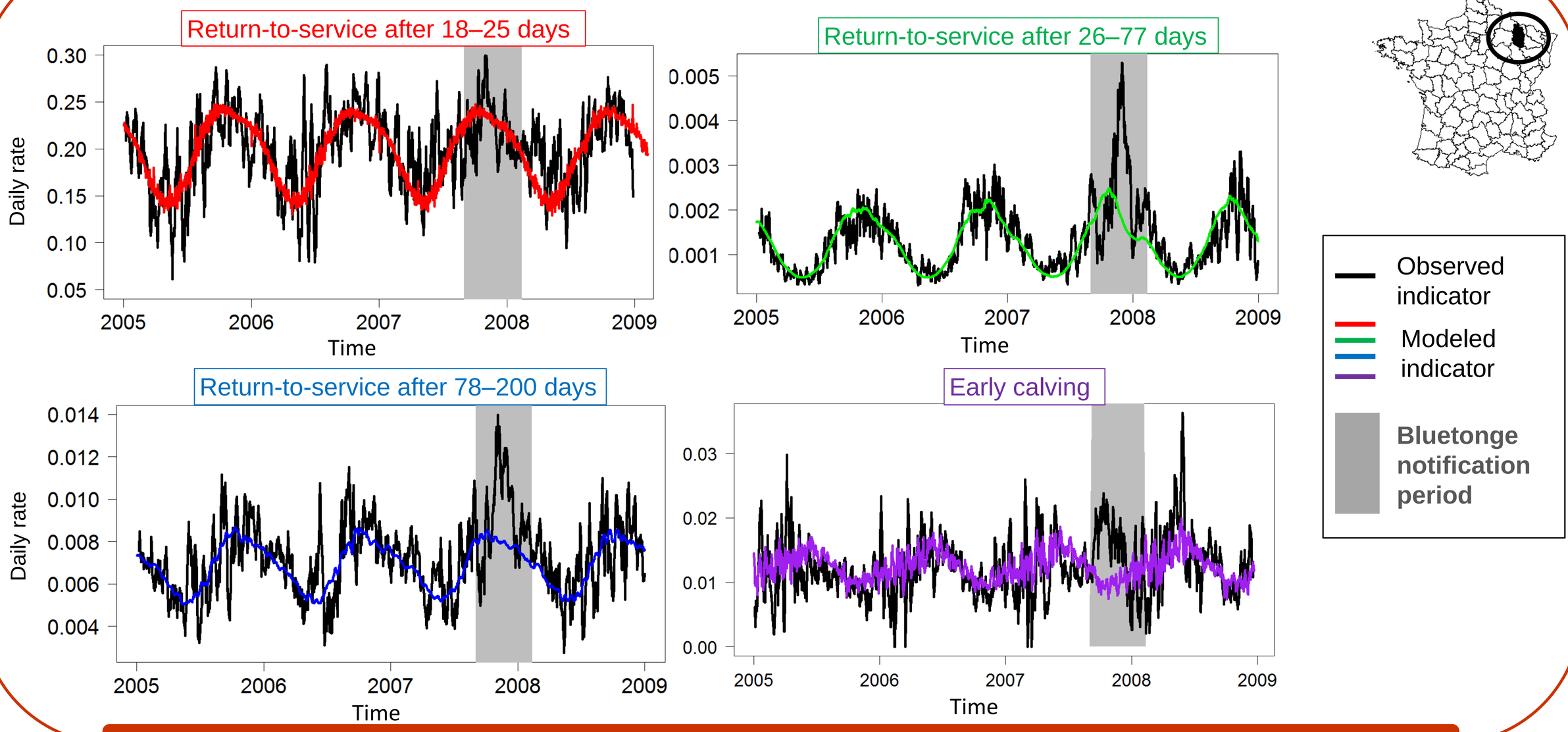
The occurrence of emerging diseases in European dairy cattle is **expected to increase in the future**. In 2006, Bluetongue serotype 8 has caused important **health and economic damages.** Today, Schmallenberg disease has appeared. To contain future emerging diseases, an objective of the **European project EMIDA ERA-NET** is to develop an early detection system of various symptoms.

Four indicators of reproduction disorders built from routine data

The dates of artificial insemination (AI) and calving are collected routinely in France. Three indicators have been developed from time intervals between two successive AI. A fourth one is based on the interval between the successful AI and calving. We used reproduction data collected between 01/01/2005 and 31/12/2008 in 27 French departments. The Bluetongue epidemic at the end of the period gives the opportunity to test the reliability of the indicators.



Forecasting each indicator in non epidemic condition: example of the Meuse department



The set of indicators is able to detect the emergence of Bluetongue epidemic

Three indicators are higher than expected during the Bluetongue epidemic. Among them, the indicator "early calving" is the one which deviates from the expected the most early. On the contrary, the indicator "return-to-service after 18-25 days" does not deviate from the expected but could possibly be efficient for other diseases.

Further work will focus on temporal alert criteria and spatial detection of infected areas

To develop the early detection system, we need automatic alert criteria which are sufficiently sensitive but which do not produce too many false alerts. To use this system at the national scale, algorithms such as those used by statscan will be considered to detect infected areas.

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