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BEERAD – Assessment of the effects of ionizing radiation (IR) in bees

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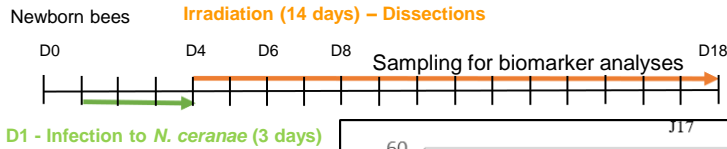


Lab experiments

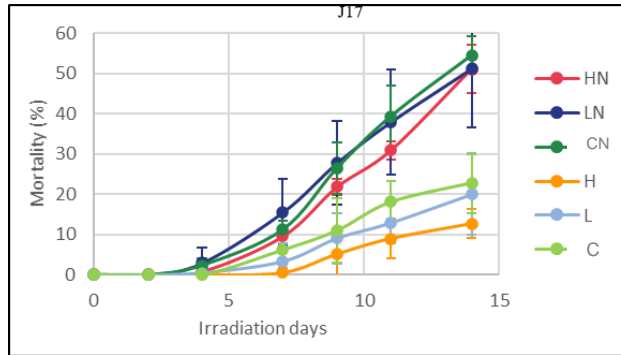
2022: combined effects of IR + pathogens

Infection to *N. ceranae*

14 days of irradiation to ¹³⁷Cs (15 μGy/h and 15 mGy/h)



D1 - Infection to *N. ceranae* (3 days)



HN: High dose Nosema H: High dose
LN: Low dose Nosema L: Low dose
CN: Control Nosema C: Control

Protocol of laboratory irradiation experiment on bees infected with *N. ceranae* and results of cumulated mortality

2023: Analysis of all biomarkers

Effects of IR on emergence (irradiation of small hives in flight cages to see the effects on the number on newborn bees)

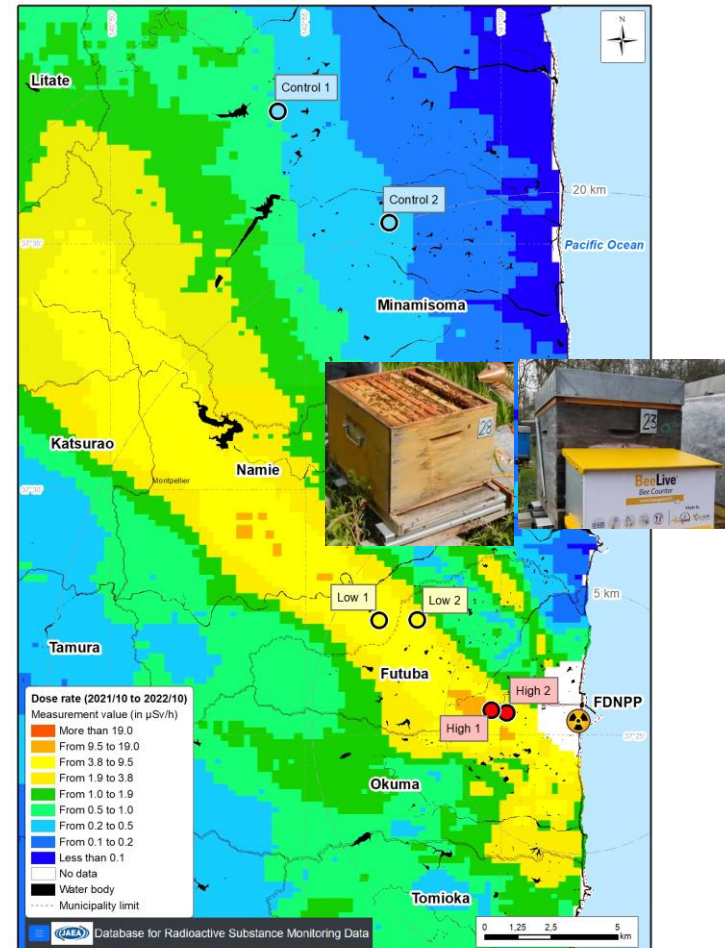
Effects of IR on behavioural responses (cognitive performances)

2024-2025: Extrapolation to other pollinating insects

Field experiments

2022: exploration of sites

2023: start of experiment: hives April 2023 -> October 2024 (6 hives/site, connected scales+counters+biomarkers+¹³⁷Cs analysis in bees/honey)



Map of 1m air dose rate in the area of Fukushima NPP; circles=location of sites selected and their ground dose rates (JM Métivier, IRSN – ArcGIS)