**INTRODUCTION**

Charcoal produced from woodland exploitation was a key source of energy for the (proto-) industrial development from the Middle-Ages to the emergence of fossil energy sources during the 19th century. Charcoal production platforms (or kilns) are some evidences of these activities and they are spread and preserved, at some extent, in forest areas. These structures with a characteristic circular to oval shape (Fig. 1) are recognizable in airborne images such as LiDAR (Light Detection and Ranging). Frequently, the density of these kilns in woodlands is so high that the visual inspection is insufficient. Methods of automatic detection based on machine learning for image analysis are being implemented to detect and quantify these structures, remaining traces of ancient forest exploitation.

**OBJECTIVES**

Development of an expedite and reliable methodology to routinely perform analysis in airborne images to increment the detection and quantification of kilns in order to better understand the history and evolution of forest resources’ exploitation.

**METHODS**

- charcoal kilns’ detection by visual inspection of images (1) and fieldwork (2)
  
  **RESULTS**

- Visual inspection of images
- Field validation and prospection

  **Visual inspection of images**
  - 2641 potential charcoal kilns detected
  - 288 kilns detected (128) and validated (160)

  **Field validation and prospection**
  - Preliminary results of charcoal kiln detection using deep learning techniques
    - tp: true positive; fn: false negative; fp: false positive
    - Recall → tp/(tp+fn) = 65%
    - False Discovery Rate FDR → fp/(fp+tp) = 38%
    - The high FDR makes us look at the detections: are all false positive really false?

**PERSPECTIVES**

Future work will focus on (1) assessing of detection in the field (planned for mid-November 2020), (2) improving the charcoal kiln detector and, with the feedback of the fieldwork, fine-tune our model and (3) using our charcoal kiln detector in a new unstudied area.