



## Data Article

# A dataset of aerial photographs of 1972 from an irrigated area in Monegros, Spain



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## ABSTRACT

Our dataset contains the scans of 278 paper prints of contacts from a photogrammetric flight of 1972, plus a diagram for the relative location of each of the photograms. The paper prints served three years later, i.e. in 1975, for studying the soils of an irrigated district. The entire flight covered about 705 km<sup>2</sup>, in the semiarid Central Ebro Basin, at the province of Huesca, Spain. The flight encompasses the 359 km<sup>2</sup>-irrigated district fed by the sections 2<sup>nd</sup> and 3<sup>rd</sup> of the first part of the Canal of Monegros, plus the westward conterminous non-irrigated lands until the border with the province of Zaragoza (Fig. 1). The Spanish Ministry of Agriculture throughout its now extinct branch Institute for Agrarian Reform and Development, i.e. IRYDA by its Spanish acronym, contracted a consulting company to produce a report [1] about the location of saline and non-saline soils of the district in 1975. The soil surveyors used the paper prints for preparing the report and marked some of the prints with color wax-pencil. Most of these marks locate the sampled sites but also appear geographical names, schematic highlights of some terrain features, and mentions to ongoing land levelling or similar works.

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## Specifications Table

Subject	Agriculture Engineering
Specific subject area	Photogrammetric flight of 1972.
Type of data	Scans of 278 contact prints of black and white aerial photos. Some of the contacts have the marks with color wax pencil stamped by the salinity surveyors in 1975. Most of these marks are for the sites where they took the soil samples while others are for some traits of the ground or for the then ongoing works.
How the data were acquired	The data are aerial photos taken in a flight of May 1972.
Data format	Data are 279 scanned documents in tif format. They consist on 278 scanned prints of aerial photographs and a flight diagram showing the footprints of the aerial photographs.
Description of data collection	We scanned in color the 278 black and white print contacts of the flight CETFA 57/72 that were available to the surveyors of 1975. The surveyors stamped in color several kinds of marks, as seen in the scans of some contacts.
Data source location	Spain, Central Ebro Basin, irrigated district watered by the 2 <sup>nd</sup> and 3 <sup>rd</sup> sections of the first stretch of the Monegros Canal (Fig. 1) and the westward adjacent lands until the border with the province of Zaragoza. The central coordinates of the flight are 41.8394 °N, 0.4178 °W.
Data accessibility	Repository name: Digital.CSIC Data identification number: <a href="http://hdl.handle.net/10261/259837">http://hdl.handle.net/10261/259837</a> Direct URL to data: <a href="https://doi.org/10.20350/digitalCSIC/14492">https://doi.org/10.20350/digitalCSIC/14492</a>

## Value of the Data

- Our dataset is useful because it provides a snapshot of the irrigated district. Moreover, the salinity surveyors of 1975 marked on the scanned prints their soil sampling sites and some land features. The usefulness is evident since the European policy packages address poorly the soil salinity [2] even that this is a concern for the modern irrigated agriculture [3], where salinity impairs heavy investments.
- Farmers, planners, and other stakeholders will benefit from the scans of the aerial photographs. The presented data set counteracts the loss of data availability over time [4,5] which hinders the study of soil salinity in the Ebro valley [6].
- The use and re-use of this dataset will be possible at any moment for comparing between years the agricultural practices and their results. It will aid to track the evolution of soil salinity and to design agronomic trials. The 60% sidelp coverage of the photos allows stereoscopic observation. This fact plus the scale and resolution of the images enable for detecting land features like the tillage furrows, the tree plantation patterns, or the bold areas within cultivated plots. The spots denoting salt-affected, waterlogging, or other factors curtailing the crops' development are easily seen.
- The aerial photographs and associated data provide a reliable information of the area at an unfinished stage of the irrigation works, and can supply clues to interpret the effects of irrigation before the so called "new era for irrigation" [7].
- Most past earth movements are now difficult to perceive, even by inspections on the ground. Contrariwise, the then ongoing earth movements for land levelling and systematization, or for the construction of the new villages, leisure areas, roads, and secondary canals, stand out in the photograms. These movements often brought saline geological materials to the surface, so locating the earth movements is key to understand the origin and evolution of soil salinity along the years if combined with hindsight appraisals [8] of the water applied to the fields.
- The data are also valuable because the Company CETFA founded in 1926 went out of business in 1993, with its historical documents either dumped or dispersed. At our knowledge the presented dataset encompasses the only surviving photograms of this flight.

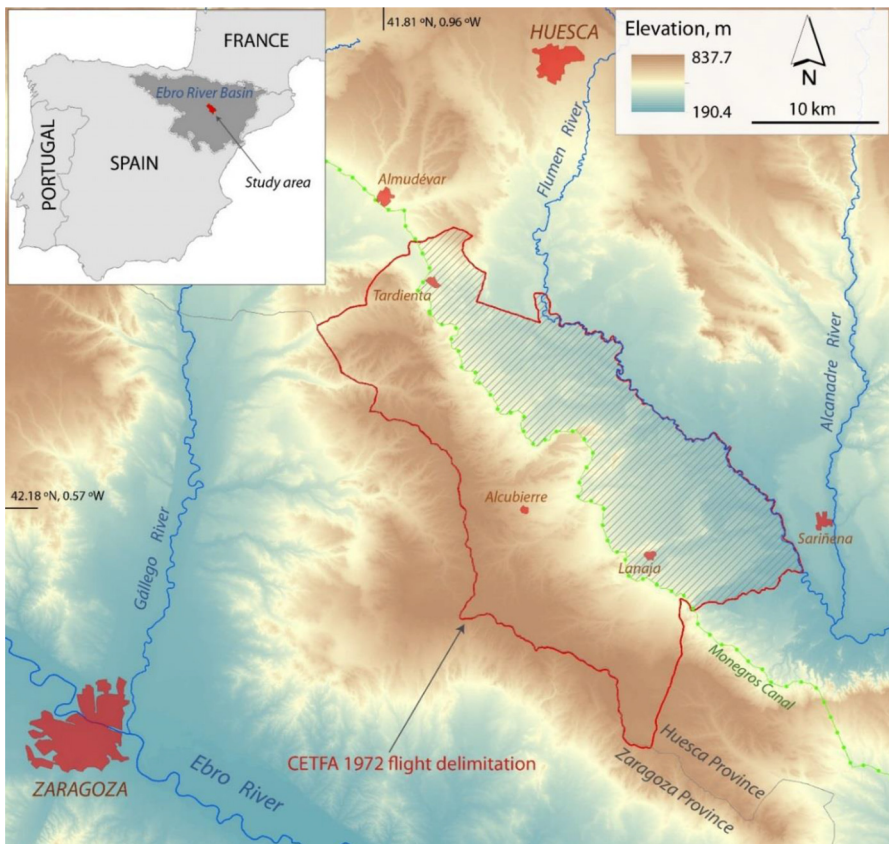
## 1. Data Description

We uploaded to Digital.CSIC the data set “MonegrosNorth1975”. Data are 279 tif files corresponding to: i) the flight diagram that sketches the footprints of the photographs for the entire flight, and ii) the color scanings of 278 paper prints of the contacts of aerial photographs of size 23 cm × 23 cm taken in May 1972. The flight diagram shows the foot prints of the photographs with their numbers, and the designation of the tracks *-pasadas* in Spanish– from P-1 to P-16 for the entire flight. The entire irrigation district, striped in the map of Fig. 1, is covered by the presented dataset (Table 1) corresponding to the eastern part of the flight CETFA 57/72.

The flight diagram also shows the railway, the main roads and villages, the limits of the municipalities, the border line between the provinces of Huesca and Zaragoza, and the delimitation and location of the sheets H285, H286, H323, H324, H325, H355, H356, and H357 of the official 1:50 000 topographic map of Spain.

The marginal information of the photograms is in Spanish. Fig. 2 presents its translation in English.

The individual size of the tif files is 119 856 KB for the flight diagram, while the size of the scanned photos range from 6232 KB to 11 594 KB.

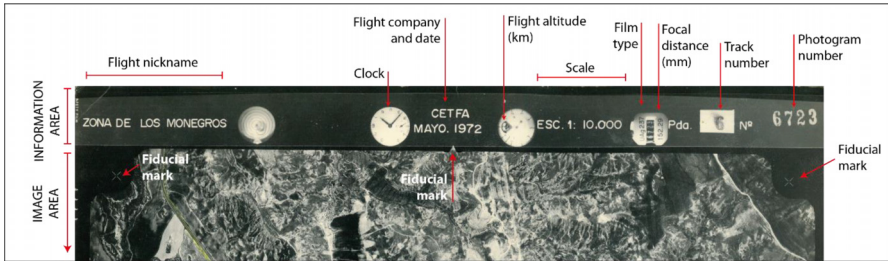


**Fig. 1.** Delimitation of the CETFA 57/72 flight, in red, on the border of the provinces of Huesca and Zaragoza (Spain). The stripy area is the irrigated district covered by the presented set of aerial photographs.

**Table 1**

Numerical designation of the 278 photographs of the flight CETFA 57/72 that were available to the salinity surveyors of 1975, and their distribution along the flight tracks.

Designation of the photographs	Flight track	Photographs in each track
6994 to 7025	P-2	32
7574 to 7580	P-2 bis	7
7028 to 7063	P-3	36
7545 to 7561	P-3 bis	17
6909 to 6917; 6924 to 6944; 6871 to 6887	P-4	47
6775 to 6786; 6844 to 6862; 6804 to 6824	P-55	52
6723 to 6773	P-6	51
7069 to 7088; 7090; 7102 to 7116	P-8	36



**Fig. 2.** Information area of the photogram number 6723 labelled with the main acquisition data.

## 2. Experimental Design, Materials and Methods

As reported in [1], the surveyors decided the location of the observations after the interpretation of photograms from the flight USAF-B at  $\approx 1:33\ 000$  scale. This flight is available in ecw-format mosaics corresponding to the National Topographic Map, at the Spanish National Geographic Institute website (<https://centrodedescargas.cnig.es/CentroDescargas/>). Then the surveyors transferred the locations to the 1:10 000 scale contacts used in the field, allowing us georeferencing the observations (<https://doi.org/10.17632/2rz97fkmzr.3>). We scanned in color all the photograms for allowing the visualization of the wax pencil marks from the surveyors.

The photogrammetric camera had a 152.29 mm focal length. For the contacts, the camera angle of view is  $3^\circ$ . Each photogram covers  $\approx 2.8\text{ km} \times 2.8\text{ km}$ , with an average pixel resolution of  $1\text{ m} \times 1\text{ m}$ . The flight altitude is  $\approx 2000\text{ m}$ .

### Ethics Statements

Not applicable.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Data Availability

[MonegrosNorth1975 \(Original data\)](#) (DigitalCSIC).

## CRediT Author Statement

**Juan Herrero:** Writing – original draft, Writing – review & editing; **Carmen Castañeda:** Writing – original draft, Writing – review & editing.

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