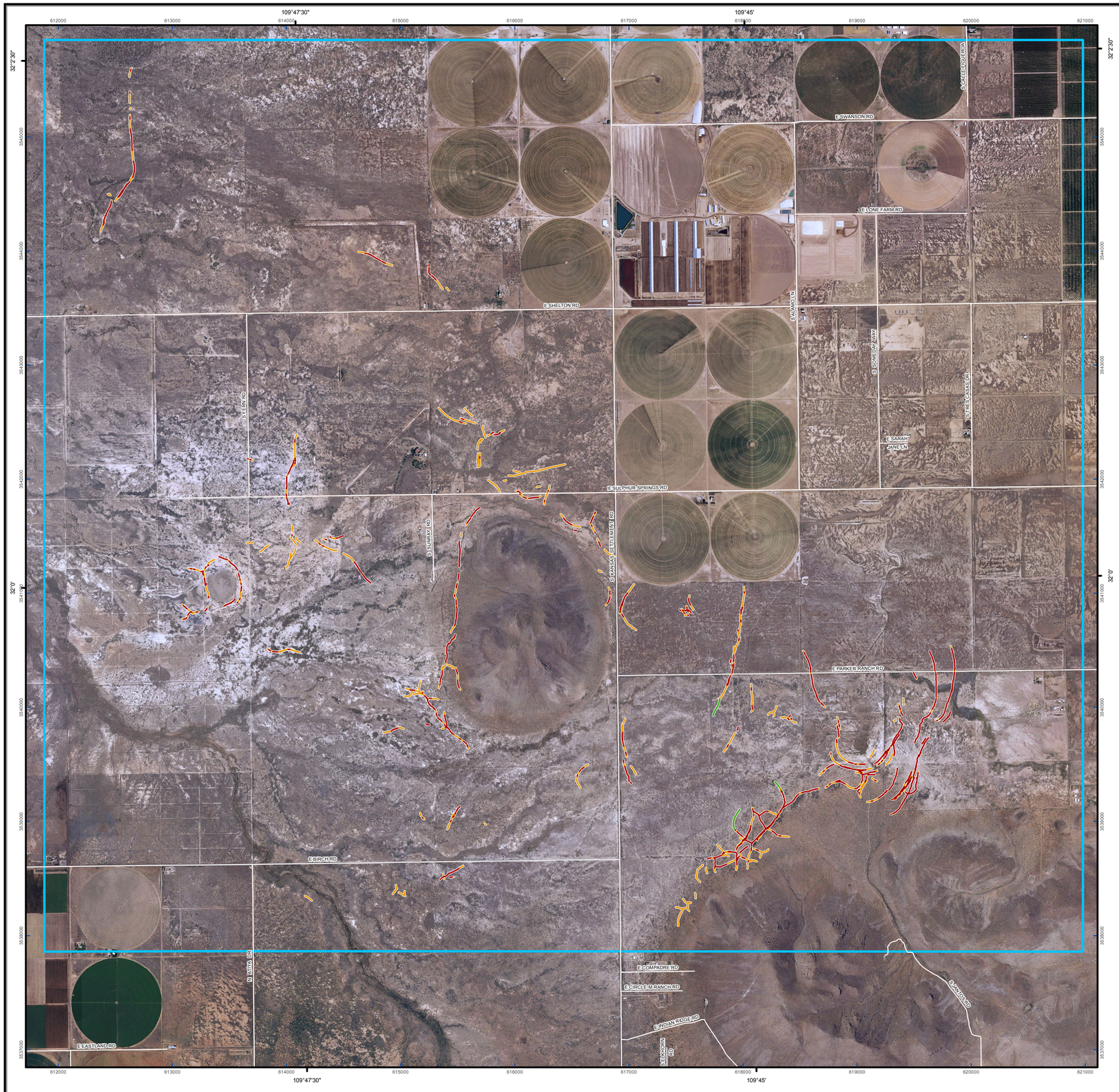
Earth Fissure Map of the Three Sisters Buttes Study Area: Cochise County, Arizona

November 2017
Arizona Geological Survey

Digital Map Series - Earth Fissure Map 22 (DM-EF-22), version 3.0



Notice

The State of Arizona has made a reasonable effort to ensure the accuracy of this map when it was produced, but errors may be present and the state of Arizona does not guarantee its accuracy. The map supplements, and is not a substitute for, a professional inspection of property for defects and conditions.

Introduction

This is one of a series of earth fissure maps prepared by the Arizona Geological Survey (AZGS) in accordance with Ariz. Rev. Stat. § 27-152.01(3). AZGS collected location information from previously conducted earth fissure studies, reviewed available remote-sensing aerial and satellite imagery, and conducted surface site investigations throughout the study area. A reasonable effort was made to identify all earth fissures in the study area. Nonetheless, some fissures may remain unmapped as a result of one or more of the following:

1) Existing fissures may have been masked by construction or agricultural activities.

2) Incipient fissures may lack clear surface expression.

3) The surface expression of fissures changes constantly as new earth fissures develop and old earth fissures fill in. A blank area on the map does not guarantee earth fissures are not present. However, blank areas within the study area boundary have been investigated, and no surface evidence of fissures was found as of the date of map publication. Determining the presence or absence of a fissure at any specific site may require additional mapping and/or geotechnical analysis.

4) Some earth fissures mapped in this study area were previously referred to as "combination earth fissure-desiccation cracks" (Harris, 2004). Based on similar appearance, morphology, and depth of surface crack to nearby known earth fissures, these features are depicted here as earth fissures. Other shallow polygonal surface crack networks within the study area were interpreted to be giant desiccation cracks and are not depicted on this map.

Air photo base compiled from 2015, 1 meter NAIP (National Agriculture Imagery Program) digital ortho imagery.

Transportation network dataset compiled by Arizona State Lands Dept. by combining the 2007 County Road Data of Maricopa, Pima, Pinal and Cochise Counties with the Census 2000 Tiger/Line Data of the remaining Counties.

Map projection and blue, 1000-meter grid ticks: Universal Transverse Mercator, zone 12 North American Datum 1983

References

Arizona Department of Water Resources (ADWR), 2017, Radarsat-2 Interferometric Synthetic Aperture Radar, Hydrology, Geophysics/Surveying Unit

Harris, R.C., 2004, Giant Desiccation Cracks in Arizona, Open-File Report OFR-04-01, Arizona Geological Survey, Tucson, Arizona, 93 p.

NAIP Orthoimagery (1-Meter GSD), 2015, USDA-FSA-APFO Aerial Photography Field Office, Salt Lake City, Utah.

MAP EXPLANATION

Red lines represent the location of continuous earth fissures manifested as open cracks or gullies.

Orange lines represent the location of discontinuous earth fissures manifested as elongated to circular depressions or as abbreviated or irregular linear depressions. These discontinuous surface features frequently represent an incipient surface expression of an earth fissure.

Yellow lines represent the location of fissures confirmed by non-AZGS personnel or clear evidence of earth fissures on aerial imagery. Traditional field investigation of these features by AZGS was hindered by agricultural or urban modification of the land surface.

The outline of the Study Area is shown in blue. The limits of the study area are based on interpretation of modern and recent ground subsidence data provided by the Arizona Department of Water Resources. Historical and modern aerial photos taken within this area were searched for anomalous lineaments. These lineaments were then investigated in the field to determine if there was any evidence of earth fissures.

1:24,000 Scale

1 0.5 0 1 Miles

1 0.5 0 1 Kilometers

0 1000 2000 3000 4000 5000 Feet

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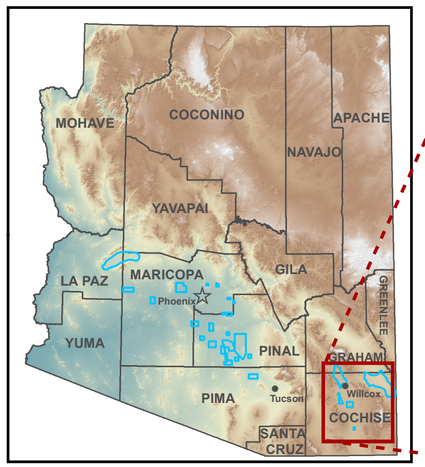
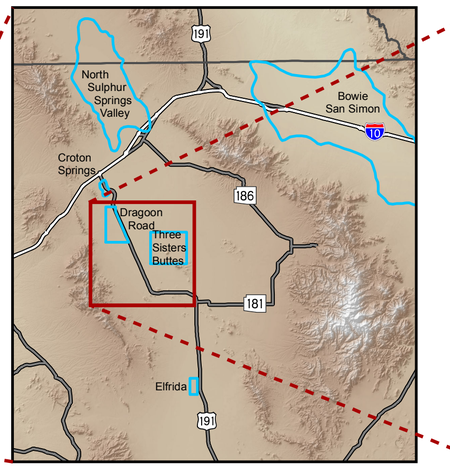
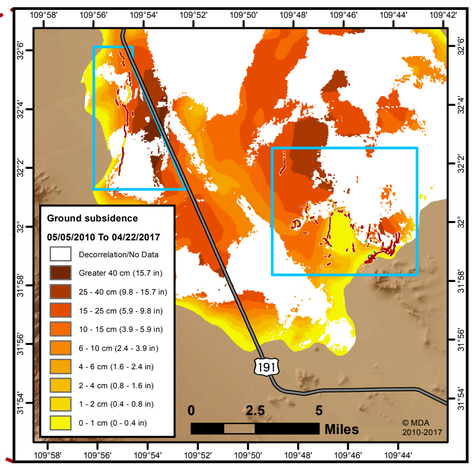




Ground Subsidence Map
Study Area shown in Blue



Subsidence data provided by the Arizona Department of Water Resources (ADWR) Interferometric Synthetic Aperture Radar (InSAR), Hydrology, and Geophysics/Surveying Unit. Subsidence data for other locations and time periods is accessible at http://www.azwater.gov/AzDWR/Hydrology/GroundwaterandLandSubsidence.htm

Shaded relief basemap produced from 10m NED Digital Elevation Model

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