

Alluvial fan mapping, ver. 20230911

Mapping

- Mapping of all sufficiently identifiable AFs at the AF's catchment outlets
- One AF per outlet, except for polygenetic fans; intermediate fans or subdivided fans received the same superordinate ID and a sub-number (see also type)
- Data basis for mapping: ESRI World Imagery (true color composites) with a spatial resolution of ~0.5 m or less; in some areas, a hillshade generated from GLO30 data was used as support
- Time range:

Date (MM/DD/YYYY)	Satellite	Resolution (m)	Accuracy (m)	Source
6/24/2018	WV02	0.5	8.47	Maxar
3/4/2019	WV02	0.5	8.47	Maxar
3/29/2019	WV03	0.31	8.47	Maxar
9/14/2019	WV03	0.31	8.47	Maxar
1/20/2020	GE01	0.46	8.47	Maxar
9/24/2019	WV02	0.5	8.47	Maxar
2/24/2019	WV02	0.5	8.47	Maxar
12/18/2019	GE01	0.46	8.47	Maxar
7/4/2019	GE01	0.46	8.47	Maxar
3/1/2020	GE01	0.46	8.47	Maxar
2/27/2020	GE01	0.46	8.47	Maxar
9/2/2019	WV03	0.31	8.47	Maxar
9/8/2019	WV03	0.31	8.47	Maxar
2/8/2019	WV02	0.5	8.47	Maxar
7/26/2019	WV03	0.31	8.47	Maxar
9/14/2018	GE01	0.46	8.47	Maxar
1/28/2019	WV02	0.5	8.47	Maxar
3/27/2019	GE01	0.46	8.47	Maxar
2/27/2019	WV02	0.5	8.47	Maxar
1/25/2018	GE01	0.46	8.47	Maxar
3/12/2020	GE01	0.46	8.47	Maxar
1/28/2020	GE01	0.46	8.47	Maxar
8/14/2019	GE01	0.46	8.47	Maxar
9/16/2019	GE01	0.46	8.47	Maxar
1/28/2020	GE01	0.46	8.47	Maxar
2/8/2020	GE01	0.46	8.47	Maxar
4/1/2019	WV02	0.5	8.47	Maxar
6/20/2019	GE01	0.46	8.47	Maxar
11/4/2019	GE01	0.46	8.47	Maxar
12/15/2019	GE01	0.46	8.47	Maxar
2/24/2020	GE01	0.46	8.47	Maxar
9/3/2022	WV02	0.5	5	Maxar
12/7/2022	WV02	0.5	5	Maxar
11/20/2022	WV03	0.31	5	Maxar
4/15/2022	WV02	0.5	5	Maxar
5/9/2022	WV03	0.31	5	Maxar
2/13/2023	WV02	0.5	5	Maxar
7/16/2022	WV02	0.5	5	Maxar
3/26/2023	WV02	0.5	5	Maxar
5/23/2022	GE01	0.46	5	Maxar

- Mapping scale in ArcGIS Pro: ~1:1,000 to 1:5,000
- In general, the maximum AF extent, which could – with a high confidence – be attributed to the fan, was mapped
- For the following AF IDs a AF could not be identified sufficiently: 12, 16, 38, 50, 51
- Some generalization was applied especially in the areas of the apex since the catchment outlet cannot reflect the correct palaeoapex of the fan system
- Mapping of fan #44 is partially based on Krapf et al. (2005)

Fan type classification

Prefix (Type of alluvial fan)		Suffix (Location of sink/fan)	
A	Single Alluvial fan	S	Skeleton Coast
B	Part of a Bajada	A	Atlantic Ocean (beach and lagunes included)
C	CAF Complex (two to 5-7 coalescing or neighboring fans)	I	Fan as intermediate sink and part of larger fan system studied/considered downstream
P (combinable with others)	Polygenetic fan		
T0 (combinable with others)	(Sub)recent T0 channel of an alluvial fan (only for big catchments: 17, 53, 57)		

Mapping quality assessment

- **Quality (1-4) (basis for subselections)**
 - 1 – the fan extent can be clearly delimited, subjectively excellent accuracy/quality
 - 2 – the fan extent can be correctly delimited in the very most parts, subjectively good accuracy/quality
 - 3 – the fan extent cannot correctly be delimited at several locations, which is due to coalescing neighboring fans, bedrock, and/or the general beach environment; some limits had to be chosen arbitrarily; subjectively moderate but sufficient accuracy/quality
 - 4 – the fan extent can only hardly be delimited from either neighboring fans, bedrock, and/or the beach environment, the limit chosen is strongly arbitrary; subjectively bad and insufficient accuracy/quality → ID: 11, 13, 29, 30, 33, 34, 35, 36, 37, 39, 57-2, 58, 59, 60, 61
- Outcropping bedrock were clipped out from the fan polygons but only if it could be identified as bedrock with a high certainty and consequently only for quality classes 1-3 (except for ID 58)
- Single dunes or sandsheets were not clipped out since they are mobile and temporary morphodynamic features

Reference

- Krapf, C. B. E., Stanistreet, I. G., & Stollhofen, H. (2005). Morphology and Fluvio-Aeolian Interaction of the Tropical Latitude, Ephemeral Braided-River Dominated Koigab Fan, North-West Namibia. In *Fluvial Sedimentology VII* (pp. 99-120).