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## Zap Pit

- ▶ [Microcrater](#)

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## Zibar

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### Definition

Coarse-grained low-amplitude transverse bedform lacking well-developed slip faces (Jackson 1997, p. 725; Cooke and Warren 1973, p. 309).

### Synonyms

Coarse sand sheet (Pye and Tsoar 1990); [Sand levee](#)

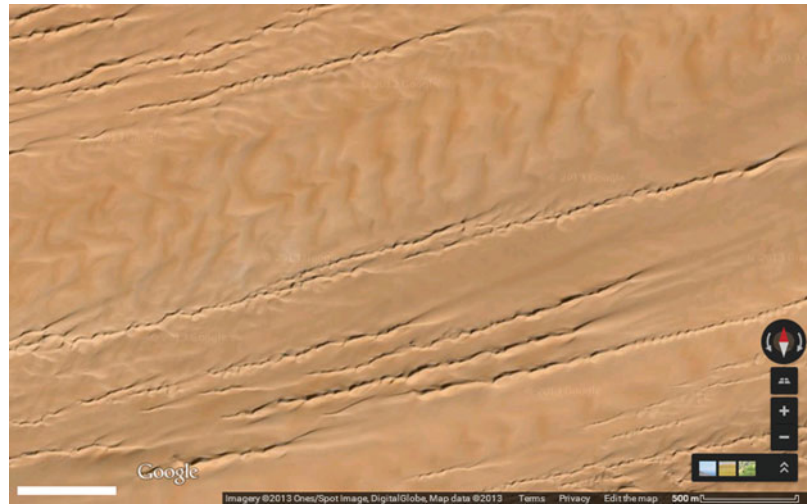
### Description

Zibar are recognized by their coarse grain size, which is distinct in an aeolian system as the wind is generally capable of most easily carrying fine- to medium-grained sands. These coarse-grained, rounded bedforms have low amplitude and lack well-developed slip faces. The zibar are interbedded with interzibar deposits which also comprises relatively coarser sands with low-angle flat-ripple laminae (wind ripples). In the absence of the zibar, these coarse-grained sandy layers with low-angle flat-ripple (wind ripples) laminae combine to form amalgamated interzibar deposits (Biswas 2005; Neilson and Kocurek 1986).

### Morphometry

Teneré Desert zibar are up to 4–7 m high, their spacing is 150–400 m (Warren 1971; Fig. 1). The surface features of zibar comprise packages of fine- to medium-grained low-angle flat-ripple laminae (wind-ripple laminae) which are separated from each other by low-angle truncation surfaces (Kocurek and Dott 1981; Biswas 2005). Ripple laminae within each package generally show a marked parallelism but differ slightly in their orientation from laminae in subsets above or below. These packages of ripple laminations are actually formed by translation

**Zibar, Fig. 1** Zibar dunes between linear seif dunes in the Ténéré Desert, Niger, at 18.37°N, 12.25°E. Scale bar 500 m (Google Earth, Cnes Spot, DigitalGlobe)



of wind ripples under sufficient sand supply (Hunter 1977; Kocurek and Dott 1981).

## Interpretation

Studies on zibar and the accompanying interzibars, as well as their occurrence, are limited in the global record. Zibar, although comprising unique facies attributes are actually similar in morphology to ► [whaleback dunes](#). Study of Ground-Penetrating Radar (GPR) profiles across one such dune from the lower Victoria Valley, Antarctica, reveal low-angle inclined sigmoid/tangential and convex reflections that are interpreted as strata within the dune. These dipping strata record the migration of the ► [whaleback dune](#) and show that they are not sand mantles as previously described but are actively migrating, long-wavelength, low-amplitude bedforms resembling zibar (Bristow et al. 2010).

## Formation

The slip face-less dune shape of the zibar modifies the near-surface airflow to produce a subtle grain-size change across the zibar/interzibar surface. Flow expansion (not separation) occurs at the leeward side of the zibar crest resulting in the lee-face deposits (those preserved upon bedform

migration) which contain the finer grain size on the zibar/interzibar surface. Sediment coarser than that deposited on the zibar lee face is transported slowly and less frequently and thus becomes concentrated on the zibar stoss slope and, ultimately, becomes interzibar deposits (Neilson and Kocurek 1986). Zibar, and their associated interzibar areas, are migrating features oriented transverse to oblique to the resultant sand-transport direction. Zibar leave deposits formed by deposition on the zibar lee face.

## Surface Units

Packages of fine- to medium-grained low-angle wind-ripple laminae which are separated from each other by low-angle truncation surfaces; an armor of relatively coarse grains covers the surface.

## Composition

Medium to coarse sand, granules.

## Studied Locations

The occurrence of zibar is few in the literature. Zibar and interzibar have been reported from the

**Zibar, Fig. 2** Zibar dunes between NE and SW trending linear dunes in the Algodones Dunes in southeastern California. Scale bar 200 m (Google Earth, DigitalGlobe)



Proterozoic Srisailam Formation, Cuddapah Basin of Peninsular India (Biswas 2005) and from the Algodones dune field, California (Neilson and Kocurek 1986; Fig. 2). Zibar dunes in southern Libya were investigated by ground-penetrating radar (Tatum and Francke 2012). Zibar were originally described in the Najd Desert of Saudi Arabia (Holm 1953).

light on the aerodynamics involved in the process of formation of aeolian bedforms.

#### Astrobiological Significance

Since zibar consist of coarse sand and granules mainly, they typically have high porosity (like regular aeolian dunes) and thus have the potential of holding water.

#### Distribution

On Earth, it commonly occurs on sand sheets, in interdune areas, or in interdune corridors.

#### Origin of Term

The term zibar was introduced from Arabic by DA Holm (1953); the word is applied to both single and multiple features (Cooke and Warren 1973, p. 309). Zibara means a hard sandy surface that permits the passage of vehicles.

#### Regional Variations

Researchers have pointed out that dunes with low-angle inclined sigmoid/tangential strata of the lower Victoria Valley, Antarctica, are migrating bedforms resembling zibar (▶ [whaleback dune](#)).

#### See Also

- ▶ [Linear Dune](#)
- ▶ [Whaleback Dune](#)

#### Significance

Absence of slip faces may in some cases indicate the relict nature of the dune as well as throw some

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## Zoned Macula

- ▶ [Gutta](#)

Corrected Proof