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Enter Your Title Here

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Abstract

The abstract should be a single-paragraph of fewer than 500 words, be understandable by a general reader, establish the question or topic of study, provide background on the subject; describe key data or analyses, and describe key results and limitations. Please avoid acronyms or if used, define them within the abstract.

Introduction

The main text should be divided into sections, starting with an introduction section. Each subsequent section should have its own heading. Headings and subheadings should be concise and clearly distinguishable. All figures and tables should be cited in order. For initial submission, please embed figures, tables, and and accompanying captions within the main text near first citation. At revision, figures should be removed from the text and uploaded individually as separate production-ready files. Each figure should be one complete, cohesive file (please do not upload sub-figures or figure parts in separate files).This will assist our efforts to streamline production. References should use a name-date format, not numbers. Enclose citations in parentheses with authors in upright text (non italics) as in: (Smith et al. 2009) or Smith et al. (2009). More information on in-text citations can be found in our Style Guide,"2.3.4 Citations."

Materials and Methods

LaTeX formats citations and references automatically using the bibliography records in your .bib file, which you can edit via the project menu. Use the cite command for an inline citation, like Kar et al. (2020), Bérard et al. (1994), Olsen and Stensland (1992), (Varga and Edmonds, 2016) and Baklouti et al. (2015), and the citep command for a citation in parentheses (Kar et al., 2020).

Descriptive Subheading About Materials or Methods. Type or paste text here. You may break the main section up into subheads as needed (e.g., one section on "Materials" and one on "Methods").

Data, or descriptive heading about data

LaTeX is great at typesetting mathematics. Let $X_1, X_2, \ldots, X_n$ be a sequence of independent and identically distributed random variables with $\mathrm{E}[X_i] = \mu$ and $\mathrm{Var}[X_i] = \sigma^2 < \infty$, and let

$$S_n = \frac{X_1 + X_2 + \cdots + X_n}{n} = \frac{1}{n}\sum_{i}^{n} X_i$$

denote their mean. Then as n approaches infinity, the random variables $\sqrt{n}(S_n - \mu)$ converge in distribution to a normal $\mathcal{N}(0, \sigma^2)$.

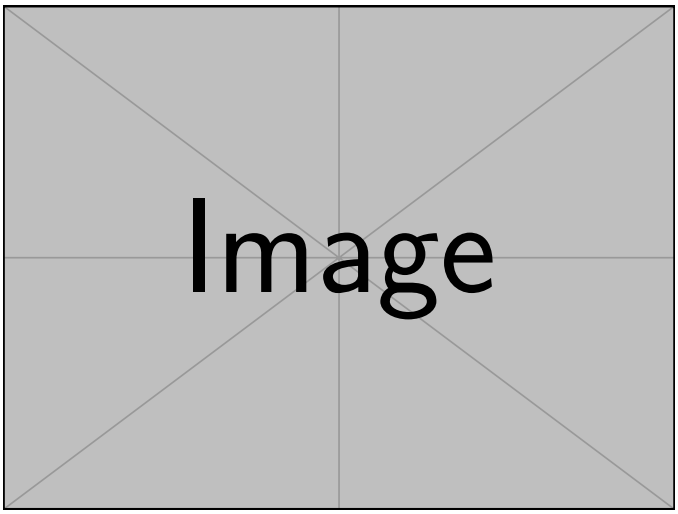

Fig. 1 – Figure captions should begin with an overall descriptive statement of the figure followed by additional text. Figure parts are indicated with lowercase letters: (a), (b), (c).

Fig. 2 – Second figure

Results

Type or paste text here.

Measurement	Shale X	Shale Y
Density	2.4	2.0
Porosity	19	40
Water content	10	19.3
Clay content	44	59.7

Table 1 – Petrophysical and rock mechanical key parameters of Shale X and Shale Y

Conclusions

Table captions should be short and descriptive. Large tables presenting rich data should be presented as separate Excel or .csv files, not as part of the main text. Additional information on table formatting can be found in our Style Guide, "2.11.1 Table Formatting".

Nomenclature

At the end of the paper or book, include an alphabetical Nomenclature of all symbols used. The list should include the letter symbol, an accurate and concise *definition*, dimensions in which the quantity is measured, and the units of measure used in the paper. Examples: p = pressure, m/Lt^2, psi; μ = viscosity, m/Lt, cp

$y =$ state vector
$m =$ vector of model parameters
$p =$ vector of primary variables
$d =$ vector of predicted data
$d_{\text{obs}} =$ vector of observed data
$d_{\text{uc}} =$ vector of perturbed observations
$g(m) =$ vector of predicted data
$C_{\text{Y}} =$ state covariance matrix
$C_{\text{YD}} =$ cross-covariance between state and predicted data
$C_{\text{MD}} =$ cross-covariance between model parameters and predicted data
$C_{\text{PD}} =$ cross-covariance between primary variables and predicted data
$C_{\text{DD}} =$ auto-covariance of predicted data
$C_{\text{D}} =$ covariance matrix of measurement errors
$H =$ augmented matrix for EnKF
$K =$ Kalman gain matrix
$\rho =$ correlation matrix for localization
$N_d =$ total number of observed data (all times)
$N_n =$ number of observed data at nth data assimilation step
$N_m =$ number of model parameters
$N_p =$ number of reservoir simulator primary variables
$N_y =$ size of the state vector. $N_y = N_m + N_p + N_n$
$N_e =$ number of ensemble members
$N_g =$ number of active gridblocks
$O_d(m) =$ likelihood objective function
$O_N(m) =$ normalized likelihood objective function

Acknowledgements

The text ends with an acknowledgment section and statement that typically includes any of the following:

- Any real or perceived financial conflicts of interests for any author
- Other affiliations for any author that may be perceived as having a conflict of interest with respect to the results of this paper.
- A statement that indicates to the reader where the data supporting the conclusions can be obtained.
- Funding information related to the work for all authors. Funding information should also be provided via the journal submission site, which uses the official Fundref list.
- Thanks to supporters and other contributors who do not qualify as authors.
- Restrictions of data, materials or chemicals information (or how to legally access) should be included in the acknowledgments section also.

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