

# Earth Sciences Research Journal



## Volume 19, No. 1 ( June 2015)

SEISMOTECTONIC-GEOLOGIC HAZARDS ZONING OF IRAN,  
*Mehran Arian*

TI-CLINOHUMITE IN THE CIÉNAGA SKARN-TYPE MINERALOGY,  
SIERRA NEVADA DE SANTA MARTA MASSIF (COLOMBIA):  
OCCURRENCE AND PETROLOGIC SIGNIFICANCE, *Carlos Alberto  
Ríos R., Oscar Mauricio Castellanos A., Carlos Alberto Chacón Avila*

PETROLOGY AND MINERALOGY OF THE FENGHUANSHAN  
GRANODIORITE, ANHUI PROVINCE, CHINA: IMPLICATIONS FOR  
PETROGENESIS AND METALLOGENESIS IMPLICATION, *Aiping  
Zhang, Yangsong Du, Yi Cao, Zhengshan Pang, Gan Luo, Kangkang Xu*

USING GIS AND GEOPHYSICS IN SELECTING SUITABLE BASINS  
WITH FRESHWATER AQUIFERS FOR AN EFFICIENT EXPLORATION  
STRATEGY - A CASE STUDY FROM PETRA-REGION, JORDAN,  
*Mohammad Al Farajat, Bernhard Schaeffers, Hussein Al Hassanat, Nedal  
Al Atteyat, Nidal Al Jahed, Jamal Khataibeh*

ALTIMETRIC AND HYPSONETIC ANALYSIS FOR SOIL AND  
WATER CONSERVATION: A CASE STUDY OF ANJANI AND JHRI  
RIVER BASIN, NORTHERN MAHARASHTRA, INDIA,  
*Golekar R. B., Baride M. V., Patil S. N., Adil S. H*

GIS BASED SCS - CN METHOD FOR ESTIMATING RUNOFF IN  
KUNDAH PALAM WATERSHED, NILGIRIES DISTRICT,  
TAMILNADU, *R. Viji, P. Rajesh Prasanna, R. Ilangoan*

ASSESSING THE CORRELATION BETWEEN CLIMATE SIGNALS AND  
MONTHLY MEAN AND EXTREME PRECIPITATION AND DISCHARGE  
OF GOLESTAN DAM WATERSHED, *Hossein Ruigar, Saeed Golian*

A REVIEW OF ROAD-RELATED SOIL EROSION: AN ASSESSMENT OF  
CAUSES, EVALUATION TECHNIQUES AND AVAILABLE CONTROL  
MEASURES, *Khoboso Elizabeth Setuloali, Heinrich Reinhard Beckedahl*

DETERMINING OPTIMAL POLYPROPYLENE FIBER DOSAGES  
IN SPRAYED CONCRETE FOR MINING AND CIVIL  
ENGINEERING APPLICATIONS, *Bayram Kahraman*

APPLICATION OF ARTIFICIAL NEURAL NETWORK FOR  
PREDICTING SHAFT AND TIP RESISTANCES OF CONCRETE PILES,  
*Ehsan Momeni, Ranli Nazir, Danial Jahed Armaghani, Hamed Maizir*

## Volume 19, No. 2 ( December 2015)

ISOSTATIC CRUSTAL THICKNESS UNDER THE TIBETAN PLATEAU  
AND HIMALAYAS FROM SATELLITE GRAVITY GRADIOMETRY  
DATA, *Robert Tenzler, Mohammad Bagherbandi, Lars E. Sjöberg, Pavel Novák*

ELECTROMAGNETIC MEASUREMENTS FOR MONITORING  
MOLYBDENUM CONTAMINATION IN NEAR-SURFACE SURVEY, *Ali  
Ismet Kamli, Borislav Neduzca*

ORIGIN OF EARTHQUAKE LIGHT ASSOCIATED WITH  
EARTHQUAKES IN CHRISTCHURCH, NEW ZEALAND,  
2010-2011, *N.E. Whitehead, Ü. Ulusoy*

STRAIN RATE ANALYSIS ON THE ÇANKIRI-BİNGÖL SEGMENT OF THE  
NORTH ANATOLIAN FAULT IN TURKEY, *Hakan Yavuzoglu*

DETERMINATION OF LOCAL SITE-SPECIFIC SPECTRA USING  
PROBABILISTIC SEISMIC HAZARD ANALYSIS FOR BITLIS  
PROVINCE, TURKEY, *Ercan Isik, Mustafa Kutanis*

PERFORMANCE OF SINGLE BASE RTK GNSS METHOD VERSUS  
NETWORK RTK, *Nedim Omur Aykut, Ergin Güllal, Burak Akpinar*

MAGMATIC EVOLUTION AND COMPOSITIONAL CHARACTERISTICS  
OF TERTIARY VOLCANIC ROCKS ASSOCIATED WITH THE VENARCH  
MANGANESE MINERALIZATION, SW QOM, CENTRAL IRAN, *Mansoureh  
Mahdavi, Rahim Dabiri, Elham Shah Hosseini*

ASSESSMENT OF A MODIFIED ROCK MASS CLASSIFICATION  
SYSTEM FOR ROCK SLOPE STABILITY ANALYSIS IN THE  
Q-SYSTEM, *Davood Fereidooni, Gholam Reza Khanlari, Mojtaba Heidari*

THE TATUÍ FORMATION (EARLY PERMIAN, PARANÁ BASIN),  
BRAZIL: PALEONTOLOGY AND PALEOENVIRONMENTAL  
CONSIDERATIONS, *Artur Chalud, Setembrino Petri*

## Volume 20, No. 1 (March 2016)

SHEAR-WAVE VELOCITY STRUCTURE OF GREENLAND FROM  
RAYLEIGH-WAVE ANALYSIS, *V. Corchete*

OXYGEN AND CARBON ISOTOPIC COMPOSITION OF CARBONATE  
ROCKS OF THE PERMIAN QIXIA FORMATION, SICHUAN BASIN:  
THERMAL EFFECTS OF EMEISHAN BASALT Huang Keke, Zhong  
Yijiang, Li Xiaoning and Hu Zuowei.

PETROLOGIC SIGNIFICANCE OF FE-RICH STAUROLITE IN PELITIC  
SCHISTS OF THE SILGARÁ FORMATION, SANTANDER MASSIF,  
*Carlos Alberto Ríos R. and Oscar Mauricio Castellanos A.*

ESTIMATION OF IDF CURVES OF EXTREME RAINFALL BY SIMPLE  
SCALING IN NORTHERN OUEME VALLEY, BENIN  
REPUBLIC (WEST AFRICA), *M. Agbazo, G. Koton'Gobi, B. Koumouhewa,  
E. Alamou and A. Afouda*  
GEOSPATIAL ANALYSIS FOR THE DETERMINATION OF  
HYDRO-MORPHOLOGICAL CHARACTERISTICS AND ASSESSMENT  
OF FLASH FLOOD POTENTIALITY IN ARID COASTAL PLAINS: A  
CASE IN SOUTHWESTERN SINAI, EGYPT. *Ahmed Wahid, Marguerite  
Madden, Fikry Khalaf and Ibtihal Fathy*

THE EFFECTS OF EX-SITU OIL SHALE MINING ON GROUNDWATER  
RESOURCES IN SIWAQA AREA, SOUTHERN JORDAN, USING DRASTIC  
INDEX AND HYDROCHEMICAL WATER ASSESSMENT. *Absharfa Hind  
Mohammad, Omid Alkardi and Elias Salameh*

ASSESSMENT BY MULTIVARIATE ANALYSIS OF  
GROUNDWATER-SURFACE WATER INTERACTIONS IN THE  
COAL-MINING EXPLORING DISTRICT, CHINA.  
*Pinghua Huang and Sumin Han*

GIS-BASED ASSESSMENT OF AQUIFER VULNERABILITY USING  
DRASTIC MODEL: A CASE STUDY ON KODAGANAR BASIN.  
*Johnny Collins, M. C. Sashikumar, P. A. Anas and M. Kirubakaran*

RB-SR ISOTOPIC GEOCHRONOLOGY AND GEOLOGICAL  
IMPLICATIONS OF DONGFENG GOLD DEPOSIT IN JIAODONG  
AREA. *Wang Zongyong, Han Xin, LY' Guixian, Zhang Xunyu, Zhang  
Yingchun, Fan Xiao, Huo Qinglong and Xu Yaqing*

VARIABLE-PERMEABILITY WELL-TESTING MODELS AND  
PRESSURE RESPONSE IN LOW-PERMEABILITY RESERVOIRS WITH  
NON-DARCY FLOW *Naichao Feng, Shiqing Cheng, Weixiang Lan, Guoquan  
Mu, Yao Peng and Haiyang Yu*

RESEARCH ON TEST-BENCH FOR SONIC LOGGING TOOL. *Xianping Liu,  
Xiaodong Ju, Wenxiao Qiao, Junjiang Lu, Baiyong Men, Kai Zhang and Yongchao Yao*

GEOCHEMICAL CHARACTERISTICS AND PALEOENVIRONMENTAL  
SIGNIFICANCE OF THE ORDOVICIAN PALEOKARST RESERVOIR IN THE  
MAIGAITI SLOPE OF TARIM BASIN. *Zhang Qingyu, Liang Bin, Qin Fengru,  
Cao Jianwen, Dan Yong, Hao Yuzhen, Li Jingru and Muhammad Aqeel Ashraf*

NUMERICAL SIMULATION OF SHOCK RESPONSE AND DYNAMIC  
FRACTURE OF A CONCRETE DAM SUBJECTED TO IMPACT LOAD  
*Lu Lu, Xin Li, Jing Zhou, Genda Chen and Dong Yun*

OPTIMIZATION OF LAND USE AT MT. YUELU SCENIC AREA: AN  
ANALYSIS USING THE ECOLOGICAL GREEN EQUIVALENT  
*Xi Chen, Ke-lin Wang, Wei-jun Zhou, Hong-bin Li and Muhammad  
Aqeel Ashraf*

DEVELOPMENT OF TROPICAL LOWLAND PEAT FOREST PHASIC  
COMMUNITY ZONATIONS IN THE KOTA SAMARAHAN-ASAJAYA  
AREA, WEST SARAWAK, MALAYSIA. *Mohamad Yarmizi Mohamad, Ng  
Tham Fatt, Zainey Konjing and Muhammad Aqeel Ashraf*

ENGINEERING INNOVATION OF A LENGTH OF NEARLY 3300M  
LARGE DIAMETER PIPELINE INSTALLED BY HDD  
*Li Guohui, Ma Xiaocheng and Yang Chunling*

GEOLOGICAL CHARACTERISTICS OF UNCONVENTIONAL  
GAS IN COAL MEASURE OF UPPER PALEOZOIC COAL  
MEASURES IN ORDOS BASIN, CHINA. *Jinxian He, Xiaoli Zhang,  
Li Ma, Hongchen Wu and Muhammad Aqeel Ashraf*

V  
2  
0

N  
2

E  
S  
R  
J

J  
U  
N  
E

2  
0  
1  
6

## Volume 20, No. 2

June 2016

### CONTENTS

- STUDY OF DISTRIBUTION OF REMAINING OIL IN WEST BLOCK OF THE THIRD DISTRICT IN NORTH SAERTU  
*Huabin Wei1a, Huanlai Zhu, Shangming Shi, Xinliang Yang, Jingjun Zhang, Jian Wang, Muhammad Aqeel Ashraf*.....A1- A4
- EXPERIMENTAL STUDY OF PETROPHYSICAL PROPERTIES OF A TIGHT FORMATION BY CONSIDERING THE CLAY  
MINERALS AND FLOW SENSITIVITIES  
*Guangfeng Liu, Shoujun Li, Daihong Gu, Yang Lu and Emmanuel Asamoah* .....B1-B5
- MAPPING OF UNDERWATER SEABED MORPHOLOGY OF THE GAZA STRIP COASTAL  
ZONE USING REMOTE SENSING TECHNIQUE  
*Khalidoun Abualhin*.....C1-C7
- WATER TEMPERATURE PREDICTION IN A SUBTROPICAL SUBALPINE LAKE USING SOFT COMPUTING TECHNIQUES  
*Saeed Samadianfard, Honeyeh Kazemi, Ozgur Kisi, Wen-Cheng Liu*.....D1-D11
- CASE STUDY OF THE CHARACTERISTICS AND DYNAMIC PROCESS OF JULY 10, 2013, CATASTROPHIC DEBRIS  
FLOWS IN WENCHUAN COUNTY, CHINA  
*Gui-Sheng Hu, Ning-Sheng Chen, Javed Iqbal Tanoli1, Yong You and Jun Li*.....E1-E13
- POTENTIAL SETTLEMENT DUE TO SEISMIC EFFECTS IN THE RESIDENTIAL AREA OF ILGIN (KONYA, TURKEY)  
*Adnan Ozdemir and M. Tahir Nalbantcilar*.....F1-F9
- AN ALGORITHM FOR GENERATION OF DEMS FROM CONTOUR LINES CONSIDERING GEOMORPHIC FEATURES  
*Xiao-Ping Rui, Xue-Tao Yu, Jin Lu, Muhammad Aqeel Ashraf, Xian-Feng Song*.....G1-G9
- TEMPORAL-SPATIAL DISTRIBUTION OF OCEANIC VERTICAL DEFLECTIONS DETERMINED BY TOPEX/POSEIDON  
AND JASON-1/2 MISSIONS  
*Jin Yun Guo, Yi Shen, Kaihua Zhang, Xin Liu, Qiaoli Kong, Feifei Xie* .....H1-H5
- COMPACTION AND COLLAPSE CHARACTERISTICS OF DUNE SAND STABILIZED WITH LIME-SILICA FUME MIX  
*Mohammed Y. Fattah, Hasan H. Joni and Ahmed S. A. Al-Dulaimy*.....I1-I8
- CLASSIFICATION OF CUT SLOPES IN WEATHERED META-SEDIMENTARY BEDROCKS  
*Johnbosco Ikenna Nkpadobi, John Kuna Raj and Tham Fatt Ng*.....J1-J9



Papers published in Earth Sciences Research Journal are covered in the following Index and Bibliographic Database: Academic Search Complete, DOAJ, Fuente Académica, GeoRef, Scopus, ISIweb of Knowledge, Latindex, SciELO, Ulrich, e-Revistas, Academic OneFile (Gale).

UNIVERSIDAD NACIONAL DE COLOMBIA  
FACULTAD DE CIENCIAS  
DEPARTAMENTO DE GEOCIENCIAS  
Research Group in Geophysics



Published by:  
UNIVERSIDAD NACIONAL DE COLOMBIA  
Facultad de Ciencias  
Departamento de Geociencias

ESRJ publishes the results from technical and scientific research on various disciplines of Earth Sciences and its interactions with several engineering applications. Works will only be considered if not previously published anywhere else. Manuscripts must contain information derived from scientific research projects or technical developments. The ideas expressed by publishing in ESRJ are the sole responsibility of the authors. The contents of this journal can be reproduced provided appropriate citation is mentioned.

**Mail address, suscription and submission of manuscripts:**

Universidad Nacional de Colombia  
Departamento de Geociencias  
Edificio Manuel Ancizar, of. 204  
**Phone:** +57-1 3165000 Ext. 16520  
**Fax:** +57-1-3165390  
**e-mail:** earthjour\_fcbog@unal.edu.co

**URL:**  
<http://www.esrj.unal.edu.co/>

**ASSISTANT EDITOR**  
Andrés Felipe Torres Villegas  
earthjour\_fcbog@unal.edu.co

ESRJ is published twice a year December and June

**Date and place of edition:**  
December 2014.  
Bogotá, D.C., Colombia

Diagramed: INFORMACIÓN VISUAL S.A.S.  
Printed: DIGIPRINT EDITORES S.A.S.  
Bogotá, D.C., Colombia, 2014

**EARTH SCIENCES RESEARCH JOURNAL**

**CHIEF EDITOR**  
Carlos A. Vargas J.  
cavargasj@unal.edu.co  
Departamento de Geociencias

Ciudad Universitaria  
Bogotá, Colombia

**EDITORIAL COMMITTEE**  
Carlos Roberto dos Anjos Candeiro  
Universidade Federal de Uberlândia  
Ituiutaba, MG - Brasil  
<http://www.facip.ufu.br/>

Gaspar Monsalve  
gmonsalmv@unal.edu.co  
Universidad Nacional de Colombia - Sede Medellín

Dimitris Alexakis  
dial@survey.ntua.gr  
National Technical University of Athens

Lluís Pujades  
lluipujades@upc.es  
Universidad Politécnica de Cataluña

Jorge Rabassa  
jrabassa@gmail.com  
CADIC, CONICET

**SCIENTIFIC COMMITTEE**  
Frank Audemard  
faudemard@funvisis.org.ve  
Fundación Venezolana de Investigaciones Sismológicas  
Caracas - Venezuela

Rossana Muzio Sauer  
rossana@fcien.edu.uy  
Facultad de Ciencias, Iguá 4225 CP11400  
Montevideo - Uruguay

Mario Ordáz Schroeder  
mors@pumas.iingen.unam.mx  
Universidad Nacional Autónoma de México  
Ciudad de México - México

Jorge E. Cortés  
jorgecortes@anteksa.com - jecortesl@unal.edu.co  
ANTEK S.A.S  
Bogotá, Colombia

Emel Vega  
eevegar@unal.edu.co  
Universidad Nacional de Colombia  
Bogotá, Colombia

**INSTRUCTIONS FOR AUTHORS**

**Manuscript Submission**

Manuscript submitted to ESRJ will only be considered if they have not been or not will be reproduced in the same extension and form in a different journal. Material as figures, tables, photos, etc. which will be reproduced in papers requires the permission of original authors. Contributions falling into the following categories will be considered for publication:

- **Regular papers:** Regular papers constitute most of the works published in ESRJ and contain original information (e.g. that has not been published, and is not being considered for publication elsewhere). There are no limitations to the length of regular experience we have found that the shorter the paper, the better they are received.
- **Brief Contributions:** To be considered as a Brief Contribution, your manuscript must contain original information that may be more limited in length and scope than a Regular Paper. Sometimes authors wish to concisely share their research and may do so through a Brief Contribution, which should be limited to six (6) pages or less, including any figures.
- **Comments, Praise, and Replies:** Sometimes differences in opinions and views arise from published research and the Earth Sciences community may benefit from open discussion. Sometimes an authors outstanding contribution may be publicly praised, as a way to acknowledge the good work. Comments on and Praises to contributions as well as their Replies, should not exceed two (2) pages in length.
- **Translations of Articles:** There are many papers ( especially classic papers) that represent momentous facts in the Earth Sciences history. Some other important articles remain unknown to the Spanish-Speaking or English-Speaking science communities because these articles are published in foreign languages. Translations of articles may be submitted to ESRJ provided that written authorization of original publishers is obtained.

With the exception of Comments, Praises, and Replies, all submissions must contain the following parts:

- TITLE
- NAME (S) OF AUTHOR (S) Please underline the name of the corresponding author.
- ABSTRACT. Should not exceed 300 words (English) A list of key words must appear following the abstract, and
- INTRODUCTION
- DATA
- METHOD
- RESULTS
- DISCUSSION
- CONCLUSIONS
- REFERENCES
- ACKNOWLEDGEMENTS (Optional)
- AUTHOR'S CONTACT INFORMATION. Please provide contact information that includes: Affiliation, e-mail, physical address, telephone, and fax numbers.
- APPENDIX (If any).

If a manuscript falls in the Brief Contribution category, the following sections may be joined:

- DATA AND METHOD
- DISCUSSION AND CONCLUSIONS

All submissions will undergo peer-review by expert in the subject area being considered.

Usually two reviewers are assigned; one of them may be a local scientist. The names of the authors are kept in confidentiality.

**Potential Reviewers of your Manuscript**

ESRJ maintains a data base of reviewers and expert in various disciplines of Earth Sciences. To speed up the process of review, however, we request that the author suggest at least four (4) potential reviewers for their work. The list of potential reviewers should contain full contact information and must be included along with the submission for consideration in ESRJ. Suggested reviewers must fulfill the following requisites:

- MS or Ph. D academic degree in a discipline relate to the work under consideration.
- Scientific production (publications) during the last two years.
- Preferably affiliated with an institution that is different from that of the author.

To guarantee high standards and ethics during the review process, the Editorial Board of ESRJ reserves the right of sending manuscripts to those reviewers whom we consider appropriate.

We encourage submission of manuscripts via e-mail (MSWord or PDF formats are preferred). Optionally, Authors may submit their works as hard copies. In this case we request three (3) copies of the manuscript. After the reviewing process is completed and the paper is accepted for publication, a digital form of the manuscript will be requested for editing and final minor modifications prior to publishing

**Guidelines for preparation of your manuscript**

Manuscript must be written entirely in English, and must be spell-checked using a word processor. Please make sure that structure and grammar are appropriate. Keep in mind that ESRJ is a wide-scope

journal and your article may be read by scientists from other disciplines. After reviewing process is completed, ESRJ staff will produce and accurate Spanish version of the abstract. Both abstracts (English and Spanish versions) are published.

- Prepare your manuscript using letter-size pages (216 mm x 279 mm). Please use size 12 Times New Roman or Arial fonts, with double line spacing.

**Figures, Tables and Equations**

- Limits figures to no more than five (5) shades of grayscale. If you use elements such as lines, line stripes, dots, or specific symbols, make sure they will be easily distinguished when reduced for publication.
- Please always include geographic coordinates and/or scale in maps.
- The sizes of letters are very important. Try to use the same size text throughout a figure. Figures will be reduced in size for publication. Use Times Roman or Arial fonts. Avoid using high text on dark background.
- Try to create figures that are as close as possible to the size they will appear in the printed version of ESRJ.
- Try to use too much black in your figures. For example, some journals have found that records sections with too much black reproduce poorly.
- We require the use of S.I. physical units (m, kg, s).
- Every figure must have a number and a figure caption. The latter describes, as completely as possible, the content of the graphic. Please make sure that all symbols and abbreviations are fully explained.
- Please be aware that because we are a self-financed journal, at present, high cost do not allow us to publish color figures. All figures will be published in black and white or gray scale. Please prepare your figures accordingly.
- All tables should be numbered and must have a title.
- Please number all equations at the right.

**Format for References**

References should be arranged alphabetically by author and should follow the format that appears below.

- Reference to a paper published in a Journal following Vancouver Style:  
**Print Document, Books, Note:** Only the first word of in the title of a book or conference should be capitalised, except for proper nouns or acronyms. Capitalise the "v" in Volume for a book title.  
**Standard format:** # Author/editor AA. Title: subtitle. Edition (if not the first). Vol. (if a multivolume work). Place of publication: Publisher, Year. p. page number(s) (if appropriate).  
**Parts of a Book Note:** These examples are for chapters or parts of edited works in which the chapters or parts have individual title and author/s, but are included in collections or textbooks edited by others. If the editors of a work are also the authors of all of the included chapters then it should be cited as a whole book using the examples given above (Books).  
Capitalise only the first word of paper or book chapter.

**Standard format:** #. Author of Part, AA. Title of chapter or part. In: Editor A, Editor B, editors. Title: subtitle of Book. Edition (if not the first). Place of publication: Publisher; Year.p. page numbers.  
**Journal Articles:** Note: Capitalise only the first word of an article title, except for proper nouns or acronyms. List the first six authors followed by et al. The titles of journals should be abbreviated as they appear in the MEDLINE Journals Database. Volume, issue and page numbers are given but not labeled. To indicate a page range use 123-9, 126-34 or 111-222. If you refer to only one page, use only 111.  
**Standard format:** #. Author of article AA, Author of article BB, Author of article CC. Title of article. Abbreviated Title of Journal. year;vol (issue);page number(s).

Electronic Documents. Note: When you cite and electronics source try to describe it in the same way you would describe a similar printed publication. If possible, give sufficient information for your readers to retrieve the source themselves. If only the first page number is given, a plus sign indicates following pages, eg. 26+. If page numbers are not given, use paragraph or other section numbers inf you need to be specific. An electronic source may not always contain clear author or publisher details. The access information will usually be just the URL of the source. As well as a publication/revision date (if there is one), the date cited is included since and electronic source may change between the time you cite it and the time it is accessed by a reader.

**E-books, Standard format:** #. Author A, Author B. Title of e-book [format]. Place: Publisher; Date of original publication [cited year abbreviated month day]. Available from: Source. URL.

**E-Journals, Standard format:** #. Author A, Author B. Title of article. Abbreviated Title of Journal [format]. year [cited year abbreviated month day];vol(no);page numbers [estimated if necessary]. Available from: Database Name (if appropriate). URL.

**Internet Documents, Standard format:** #. Author A, Author B, Document title. Webpage name [format]. Source/production information ; Date of internet publication [cited year month day]. Available from: URL.

**Non-Book Formats, Standard format:** #. Person AA, Responsibility (if appropriate)  
Title: subtitle [format]. Special credits (if appropriate). Place of publication: Publisher; Year.