

OIL CELL DETECTION FROM SPOT  
IMAGE

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OF



**OIL SPILL DETECTION FROM SPOT  
IMAGE**

**BY**

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## TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	ii
TABLE OF CONTENTS	iii
LIST OF TABLES	v
LIST OF FIGURES	vi
LIST OF ABBREVIATION	vii
LIST OF APPENDICES	viii
ABSTRAK	x
ABSTRACT	xi
1.0 INTRODUCTION	1
1.1 OBJECTIVES	4
2.0 LITERATURE REVIEW	5
2.1 OIL SPILL TERMINOLOGY	5
2.1.1 Spill Progresses	9
2.1.2 Crude Oils	10
3.0 MATERIALS AND METHODS	13
3.1 STUDY AREA	13
3.2 IMAGE PROCESSING	13
3.3 SENSORS	13

3.3.1	SPOT Imaging System	14
3.3.2	Panchromatic (P) mode	14
3.3.3	Multispectral (XS) mode	15
3.4	ALGORITHMS	16
3.4.1	Lee Filter	16
3.4.2	Kuan Filter	16
3.5	DATA ANALYSIS	17
3.5.1	Flow Chart	17
3.5.2	Geometric Correction	17
4.0	RESULT	18
4.1	Oil Image	18
5.0	DISCUSSION	28
5.1	STATISTIC ANALYSIS	30
6.0	CONCLUSION	34
	LITERATURE CITED	38
	APPENDICES	40
	CURRICULUM VITAE	64



## LIST OF TABLES

Table		Page
2.1	General glossary of terms to be used in oil spill observations	7
2.2	Oil Spill Observation Glossary	8
3.1	SPOT HRV and HRVIR Instrument Characteristics	15
3.2	HRV Spectral Bands	15
3.3	HRVIR Spectral Bands	15
5.1	Schedule of statistic for oil slick image using Frost algorithm	30
5.2	Schedule of statistic for oil slick image using Gamma algorithm	31
5.3	Schedule of statistic for oil slick image using Kuan algorithm	32
5.4	Schedule of statistic for oil slick image using Lee algorithm	33

## LIST OF FIGURES

Figure	Page	
3.1	Image processing flow diagram	17
4.1	Raw image using equalization enhancement	18
4.2	Geo-coded image with no enhancement	19
4.3	Oil image using equalization enhancement before analysis	19
4.4	Image of Frost filter using window 3x3	20
4.5	Image of Frost filter using window 5x5	21
4.6	Image of Gamma filter using window 3x3	22
4.7	Image of Gamma filter using window 7x7	23
4.8	Image of Kuan filter using window 5x5	24
4.9	Image of Kuan filter using window 7x7	25
4.10	Image of Lee filter using window 9x9	26
4.11	Image of Lee filter using window 11x11	27
5.1	Graph statistic value again window using Frost algorithm	30
5.2	Graph statistic value again window using Gamma algorithm	31
5.3	Graph statistic value again window using Kuan algorithm	32
5.4	Graph statistic value again window using Lee algorithm	33

## LIST OF ABBREVIATIONS

AVHRR	-	Advanced Very High Resolution Radiometer
HRV	-	High Resolution Visible
HRVIR	-	High Resolution Visible Infra Red
NOAA	-	National Oceanic and Atmospheric Administration
VHRR	-	Very High Resolution Radiometer
SAR	-	Synthetic Aperture Radar
SPOT	-	Satellite Pour l'Observation de la Terre
km	-	kilometer
m	-	meter
ms <sup>-1</sup>	-	meter per second
nm	-	nanometer
μm	-	micrometer

## LIST OF APPENDICES

Appendix	Page
I : Statistic value of Frost filter using window 3x3 by blue graph	40
II : Statistic value of Frost filter using window 3x3 by green graph	41
III : Statistic value of Frost filter using window 3x3 by red graph	42
IV : Statistic value of Frost filter using window 5x5 by blue graph	43
V : Statistic value of Frost filter using window 5x5 by green graph	44
VI : Statistic value of Frost filter using window 5x5 by red graph	45
VII : Statistic value of Gamma filter using window 3x3 by blue graph	46
VIII : Statistic value of Gamma filter using window 3x3 by green graph	47
IX : Statistic value of Gamma filter using window 3x3 by red graph	48
X : Statistic value of Gamma filter using window 7x7 by blue graph	49
XI : Statistic value of Gamma filter using window 7x7 by green graph	50
XII : Statistic value of Gamma filter using window 7x7 by red graph	51
XIII : Statistic value of Kuan filter using window 5x5 by blue graph	52
XIV : Statistic value of Kuan filter using window 5x5 by green graph	53
XV : Statistic value of Kuan filter using window 5x5 by red graph	54
XVI : Statistic value of Kuan filter using window 7x7 by blue graph	55
XVII : Statistic value of Kuan filter using window 7x7 by green graph	56

XVIII	: Statistic value of Kuan filter using window 7x7 by red graph	57
XIX	: Statistic value of Lee filter using window 9x9 by blue graph	58
XX	: Statistic value of Lee filter using window 9x9 by green graph	59
XXI	: Statistic value of Lee filter using window 9x9 by red graph	60
XXII	: Statistic value of Lee filter using window 11x11 by blue graph	61
XXIII	: Statistic value of Lee filter using window 11x11 by green graph	62
XXIV	: Statistic value of Lee filter using window 11x11 by red graph	63

## ABSTRAK

Semenjak 1986 Perancis telah mengendalikan dengan baik satelit SPOT (*Satellite Pour l'Observation de la Terre*) sistem pengimejan satelit dengan resolusi yang tinggi. Daripada laporan-laporan *National Oceanic and Atmospheric Administration (NOAA)*, mereka telah berjaya mengesan banyak kes pertumpahan minyak di seluruh dunia. Melalui para pengkaji dan saintis, mereka telah memberi perhatian sepenuhnya dalam penggunaan data SPOT untuk mengesan dan memeta tumpahan minyak. Malah, data SPOT memiliki resolusi yang tinggi dengan 10m x 10m. Tambahan pula data SPOT juga mempunyai *multichannel bands* yang membolehkan pengukuran jarak pertumpahan minyak dibuat. Kajian ini untuk mengaplikasikan penggunaan data SPOT dalam pemetaan penyebaran tumpahan minyak. Pertumpahan minyak boleh dikesan dengan imej SPOT dalam data optikal. Tetapi ia akan digunakan dengan *algorithms* dan analisis yang sama untuk imej SAR. Kajian ini adalah untuk mengetahui samada *algorithms* dan analisis tersebut boleh diaplikasikan dalam imej SPOT untuk mengesan pertumpahan minyak di atas permukaan lautan. Kajian ini menggunakan perisian PCI EASI/PACE Versi 8.2 sistem memproses imej untuk proses data optikal. Beberapa teknik memproses imej termasuk pembetulan geometri, penajaman imej, pengesanan tumpahan minyak dan klasifikasi imej dikeluarkan dalam kajian mengesan pertumpahan minyak ini.

## **ABSTRACT**

Since 1986 France has operated the highly regarded SPOT (Satellite Pour l'Observation de la Terre) high resolution imaging satellite system. From the reports of National Oceanic and Atmospheric Administration (NOAA), they already signed a lot of oil spill in the world. According to the researchers and scientists, they have a great attention in utilizing SPOT data for oil spill detection and mapping. In fact, SPOT data have a high resolution with 10m x 10m. Furthermore SPOT data also have multichannel bands which allows to measure oil slicks thickness. This study is to utilize SPOT data in mapping oil spill spreading. Oil spills can be detected by SPOT images in optical data. But it will be used the same algorithms and analysis in SAR images. In this study is to find out whether algorithms and analysis can be used in SPOT images to detect oil slicks on the ocean surface. This study are used PCI EASI/PACE Version 8.2 image processing system to process optical data. Several image processing techniques including geometric correction, image enhancement, oil spill verification and image classification were carried out in this study for the detection of oil spill.