



2017 GFRA Scientific Meeting
25-27 October, Seoul, ROK



Current FMD Status in South-East Asia

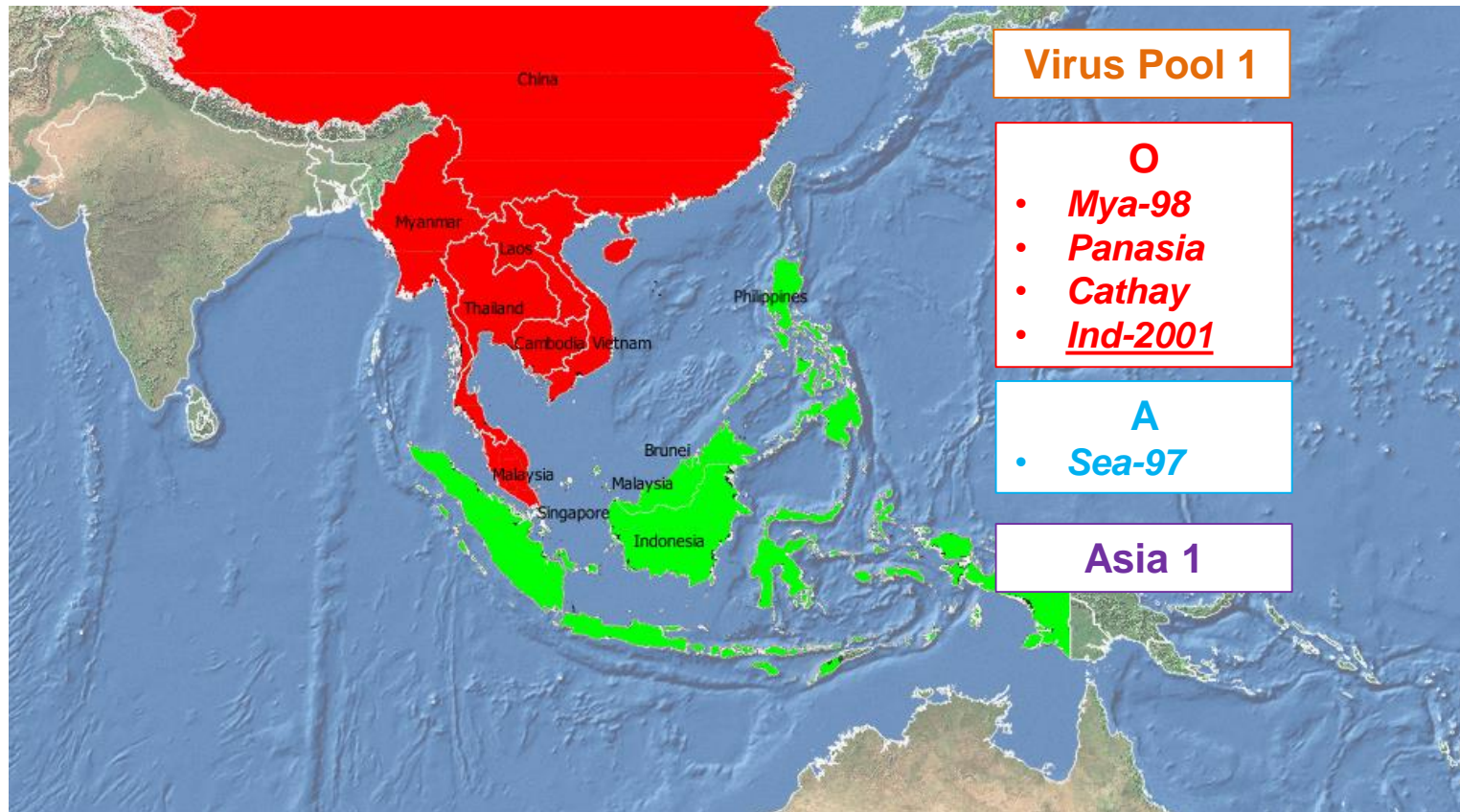
Yu Qiu, PhD
SEACFMD Project Officer
OIE SRR-SEA

Outline

- ❖ **FMD Outbreaks in SEA, 2015-2017**
- ❖ **FMDV Molecular Epidemiology & Vaccine Matching Study**
- ❖ **Recent Significant Epidemiological Changes**

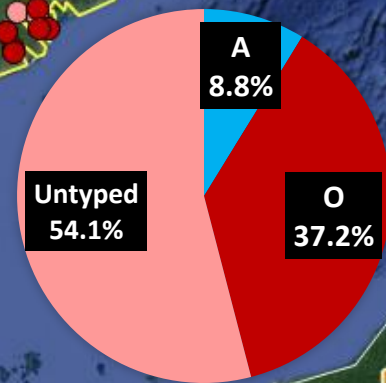
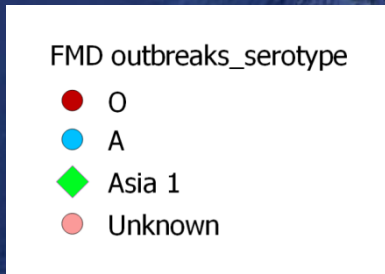
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FMD in the region



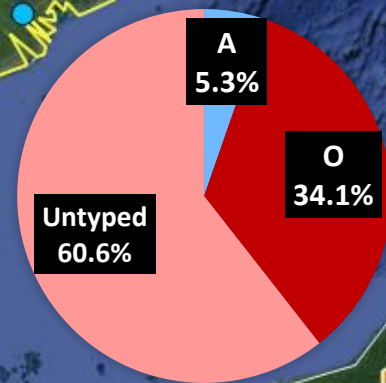
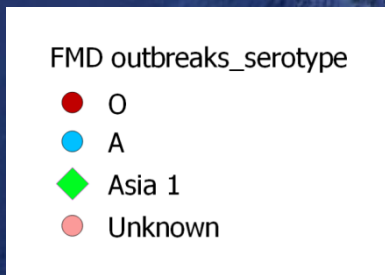
FMD outbreaks, 2015

345 outbreaks



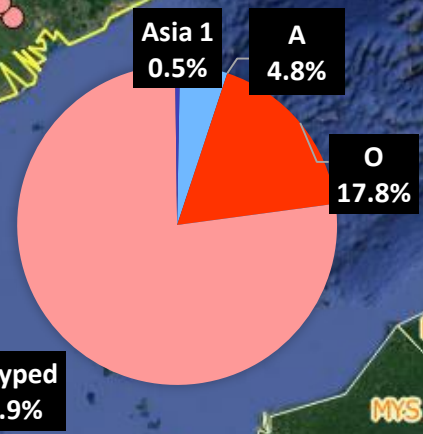
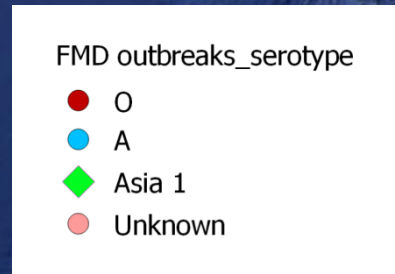
FMD outbreaks, 2016

512 outbreaks



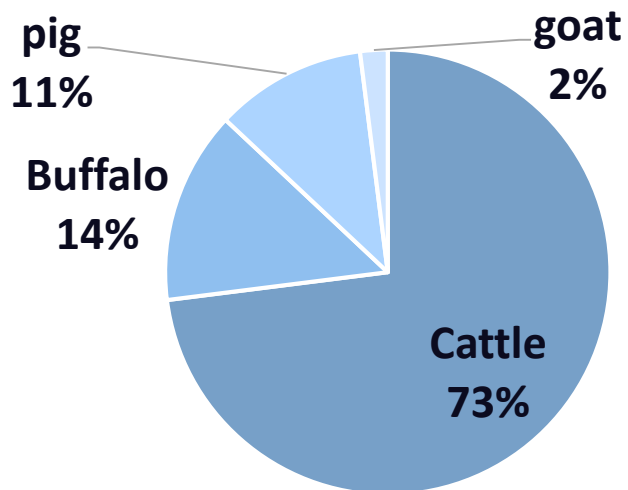
FMD outbreaks, 2017 (till July)

170 outbreaks

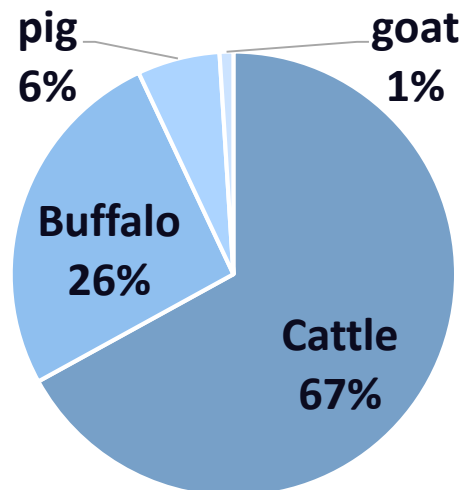


Species distribution of FMD outbreaks

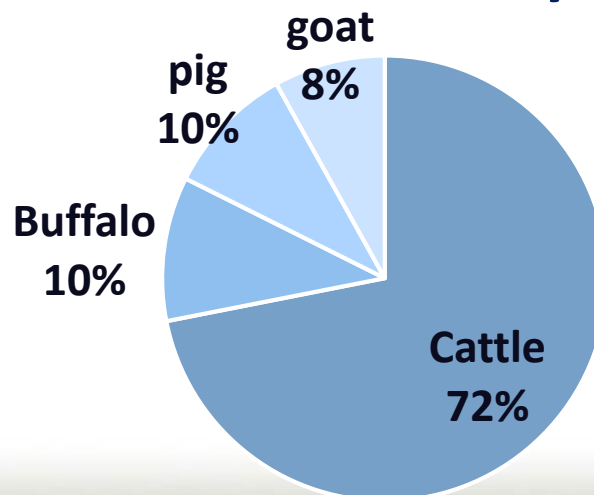
2015



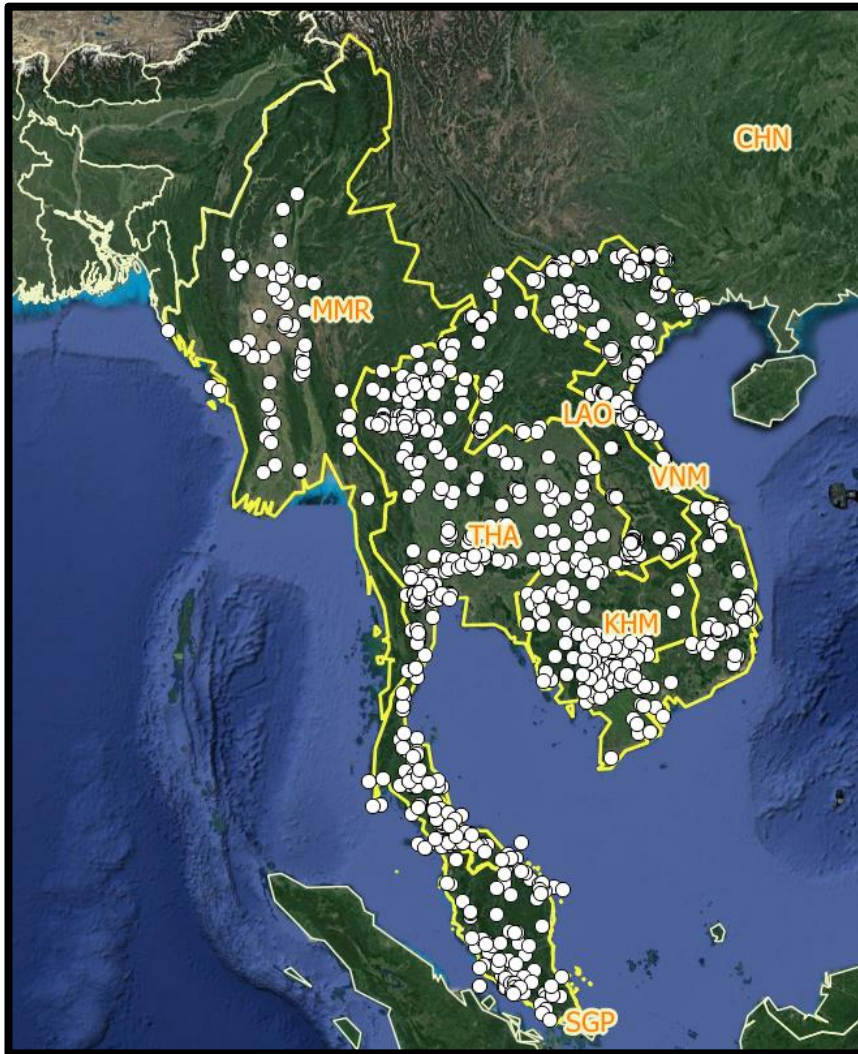
2016



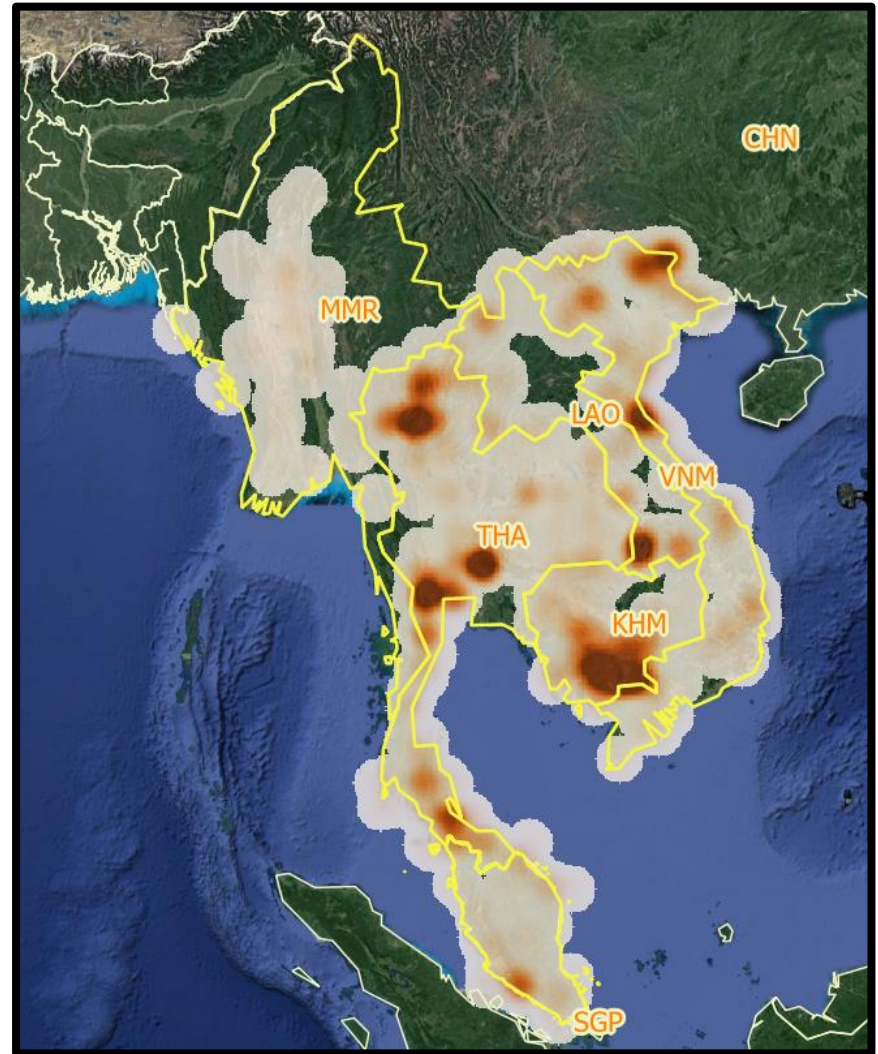
2017 (till July)



Risk Pathway: Cattle/Buffalo movement



FMD outbreaks 2011-2017

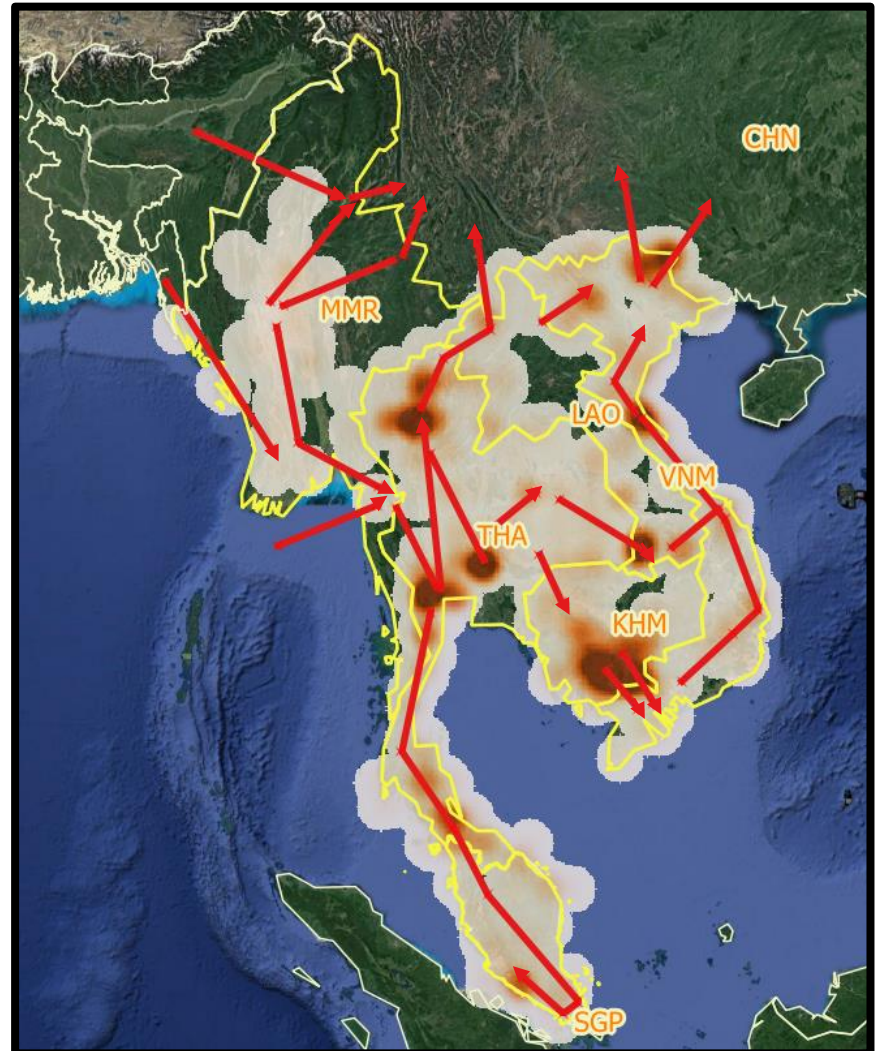


FMD hot-spots

Risk Pathway: Cattle/Buffalo movement



Major gathering points



Major movement routes

Outline

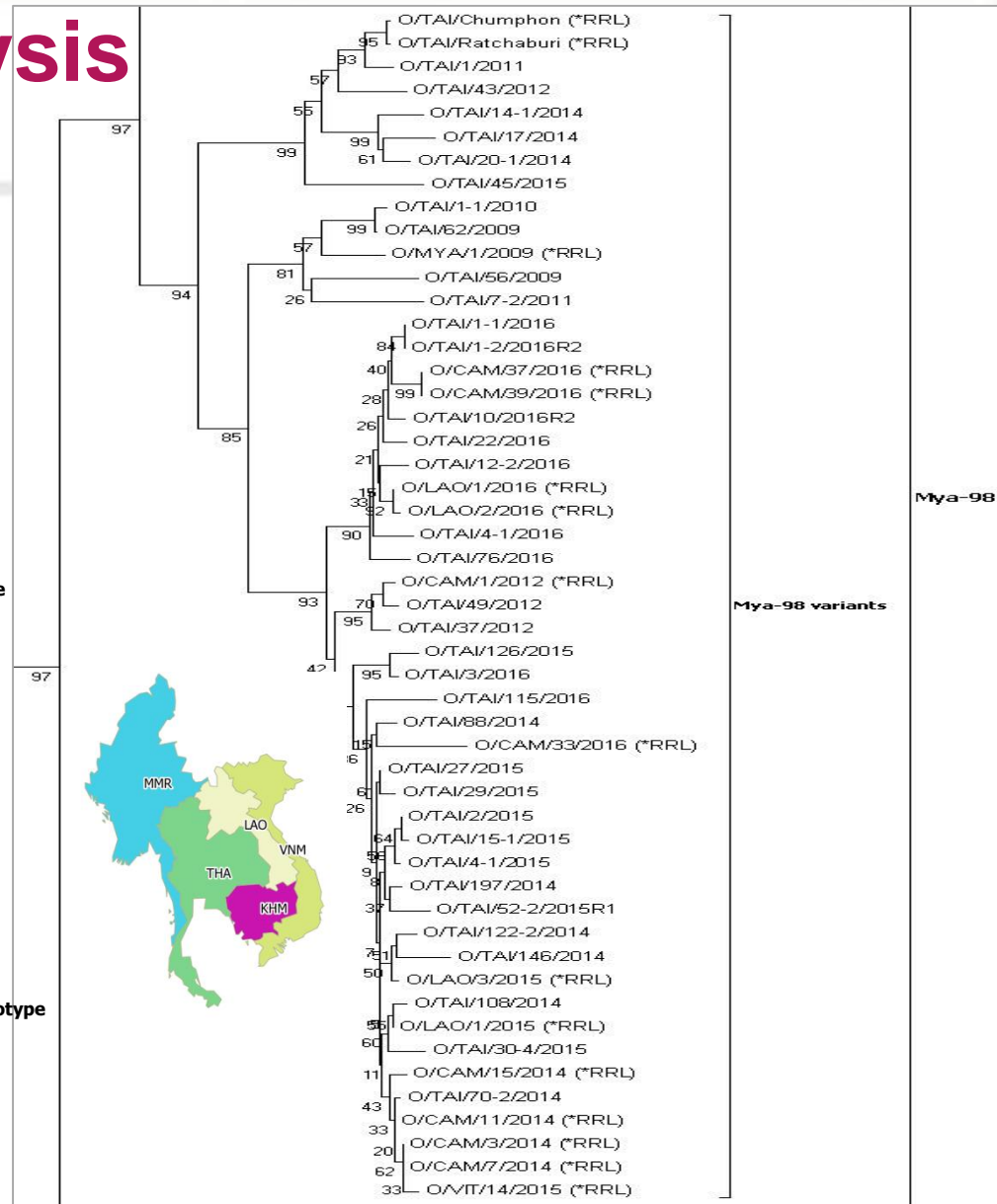
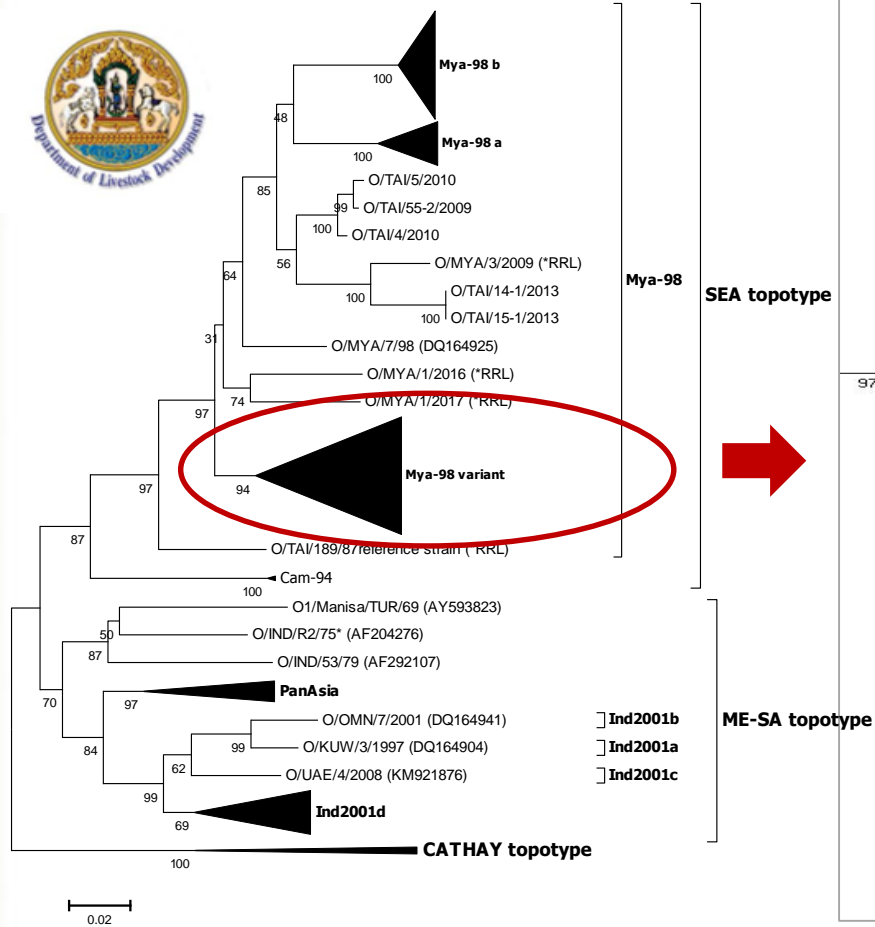
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Changes

Genotyping of FMDVs 2015-2017



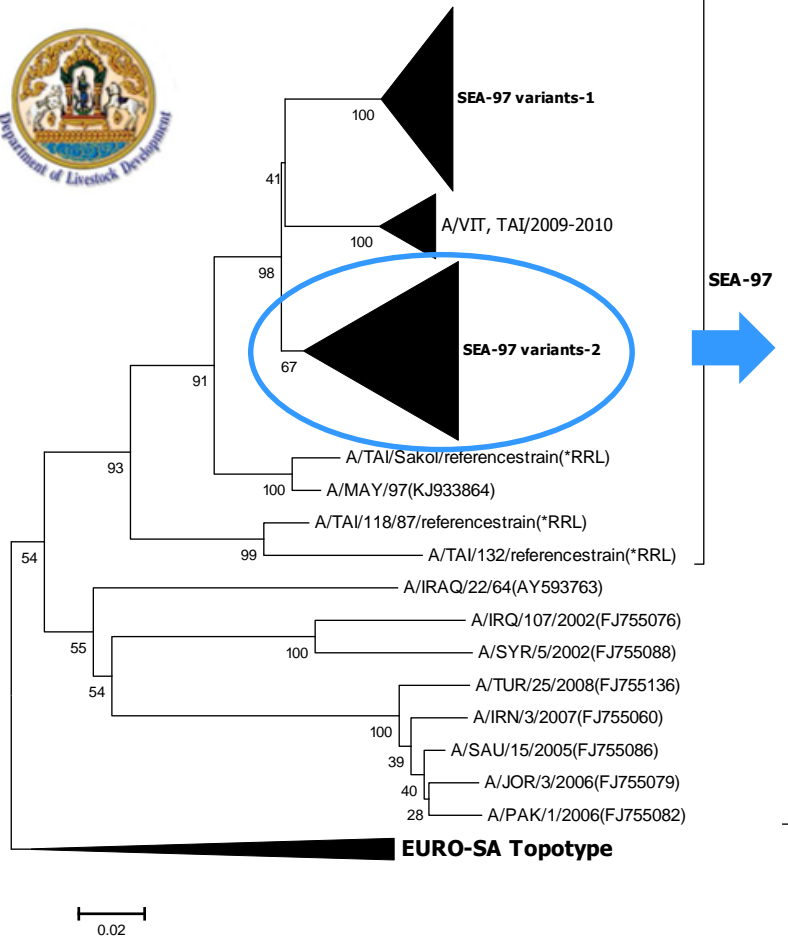
Country	Serotype O	Topotype...				Serotype A	Topotype	Serotype Asia1
		SEA/ Mya-98	ME-SA/ PanAsia	ME-SA/ Ind-2001d	Cathay			
Cambodia	+	+	+			+	+	
Lao PDR	+	+		+		+	+	
Myanmar	+	+		+		+	+	+
Malaysia	+	+				+	+	
Thailand	+	+	+	+		+	+	
Viet Nam	+	+	+	+	+	+	+	

Phylogenetic analysis Serotype O

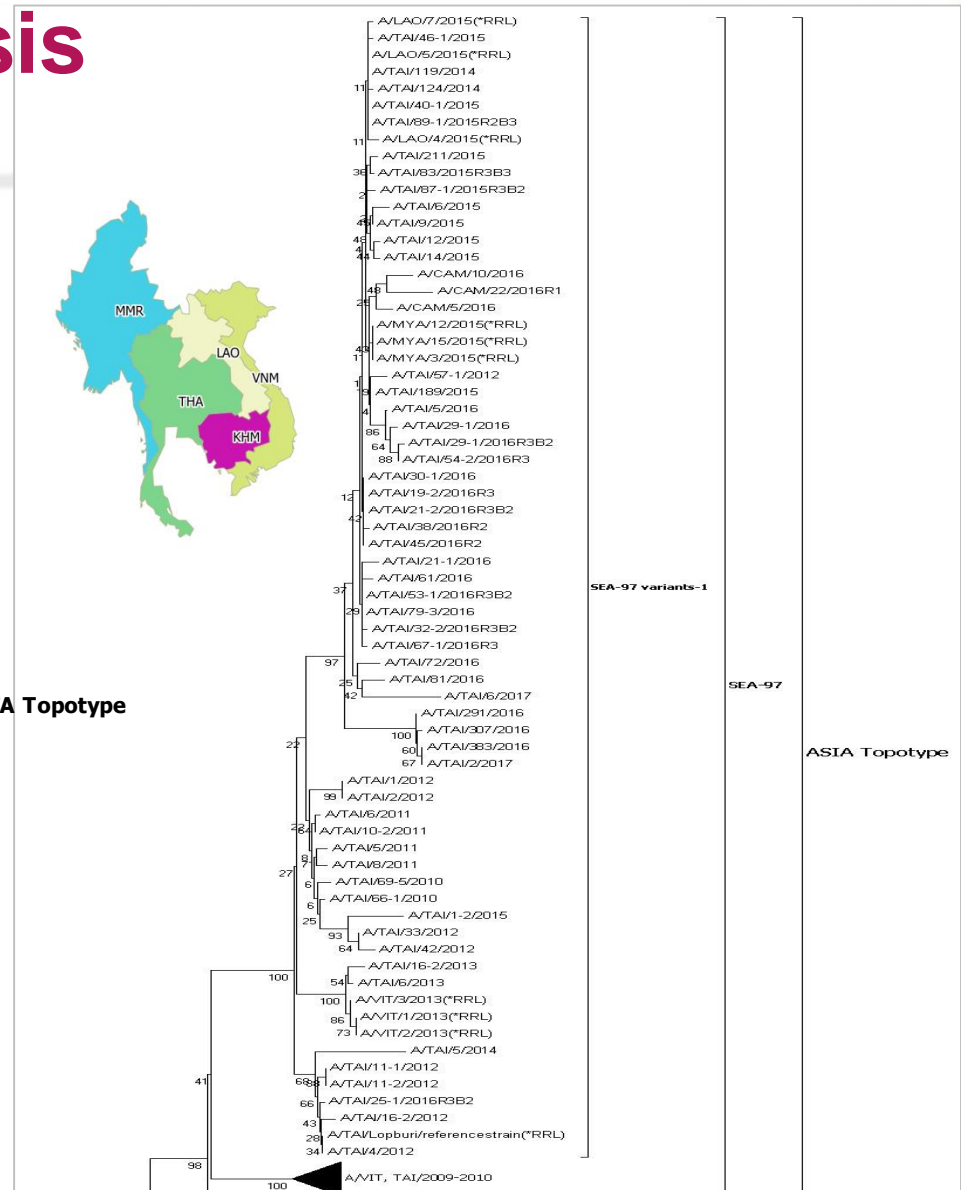


Close relationship between FMDVs in neighboring countries

Phylogenetic analysis Serotype A



ASIA Topotype



Close relationship between FMDVs in neighboring countries

Vaccine Matching (2015 – 2017)

Serotype O



		O 3039	O ₁ Manisa	O/TUR/5/2009	O SKR
CATHAY	HKN/1/2015			0.02	
	HKN/2/2015		0.06	0.02	
	HKN/8/2015	0.25	0.09	0.17	0
	HKN/9/2015	0.16	0.06	0.12	0
	HKN/3/2016	0.10	0.13	0.11	0.03
	HKN/5/2016	0.06	0.15	0.14	0.04
	VIT/8/2016	0.13	0.18	0.16	
ME-SA Ind-2001	LAO/3/2015	0.52	0.18	0.72	0.63
	VIT/8/2015	0.71	0.58	0.52	
	VIT/20/2016	0.66	0.56	0.66	
	Pan Asia CAM/03/2015	0.55	0.2	0.65	0.62
	TAI/16/2015	0.89	0.36	0.65	
SEA Mya-98	MAY/1/2015	0.33	0.35	0.50	
	MOG/02/2015	0.72	0.25	1.29	
	MOG/04/2015	0.51	0.23	1	
	MYA/01/2015	0.16	0.05	0.19	0.01
	MYA/05/2015	0.34	0.21	0.74	0.34
	TAI/09/2015	0.66	0.32	0.44	
	TAI/26/2015	0.65	0.32	0.74	
	MAY/10/2016	0.69	0.45	1.00	
	MAY/5/2016	0.68	0.60	0.69	
	SKR/07/2016	0.50	0.19	0.47	0.49
	TAI/02/2016	0.68	0.23	0.69	
	TAI/26/2016	0.41	0.18	0.28	
	TAI/37/2016	0.39	0.22	0.43	
	VIT/17/2016	0.25	0.23	0.27	

O/3039 has a better antigenic match

Vaccine Matching (2015 – 2017)

Serotype A

	A/IRN/05	A/TUR/20/06	A22/IRQ	A/MAY/97
LAO/1/2015	0.33	0.04	0.39	0.11
TAI/1/2015	0.60	0.17	0.50	0.15
TAI/15/2015	0.00	0.01	0.22	
TAI/24/2015	0.40	0.01	0.31	
TAI/4/2015	0.35	0.08	0.38	0.13
VIT/10/2015	0.12	0.15	0.50	0.48
VIT/2/2015		0.18	0.26	0.13
VIT/3/2015	0.09	0.02	0.17	0.14
TAI/20/2016	0.13	0.11	0.26	0.23
TAI/23/2016	0.62	0.10	0.91	0.14
TAI/7/2016	0.54	0.06	0.30	
TAI/8/2016	0.50	0.01	0.36	
VIT/1/2016	0.52	0.14	1.00	0.15
CAM/2/2015	0.54	0.13	0.24	0.43
CAM/5/2015	0.32	0.12	0.28	0.30
MYA/2/2015	0.50	0.22	0.89	0.06
MYA/3/2015	0.42	0.12	0.71	0.05

ASIA /Sea-97

A22/IRQ has a better antigenic match

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Ind2001d
2015



Ind2001d 2015

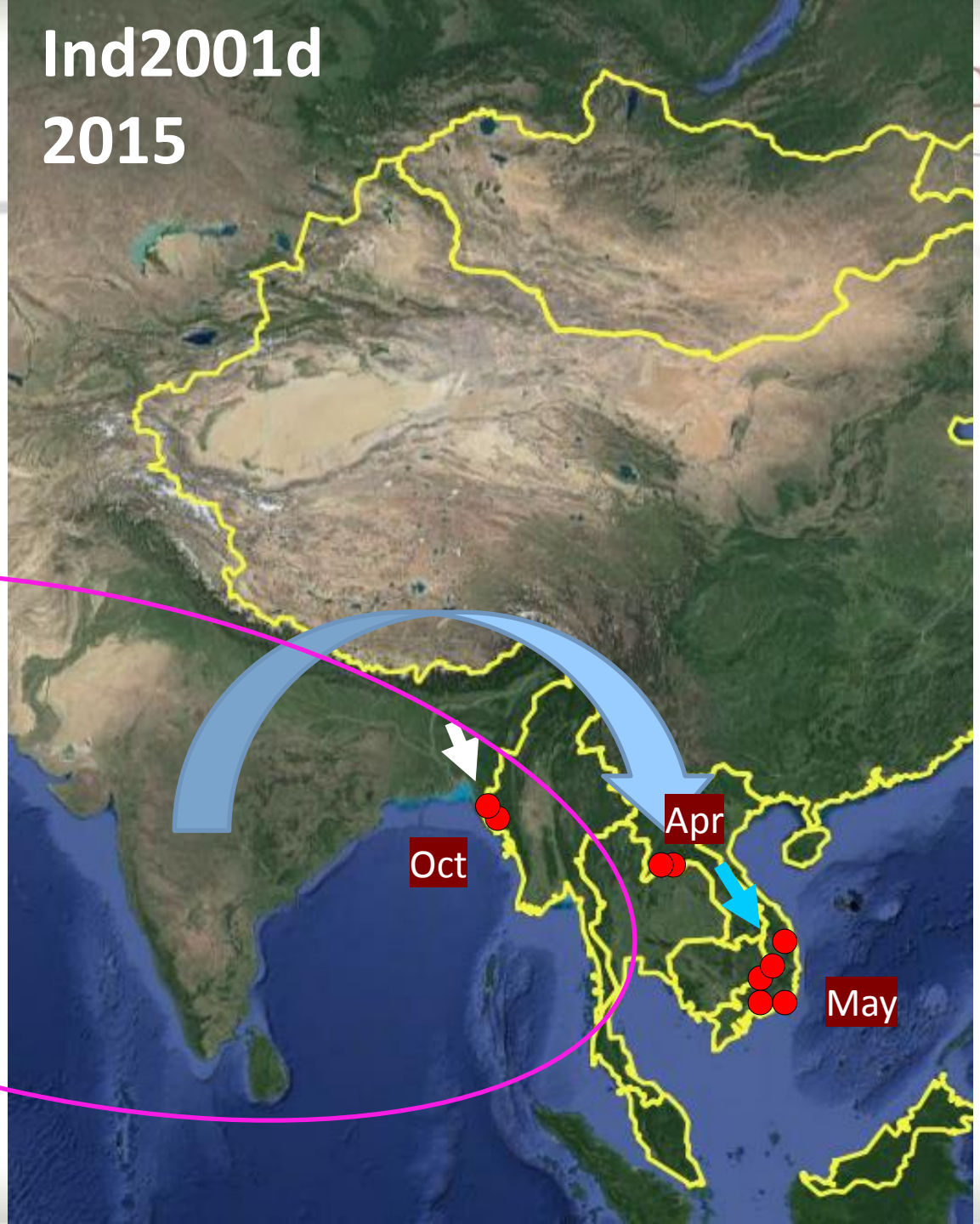
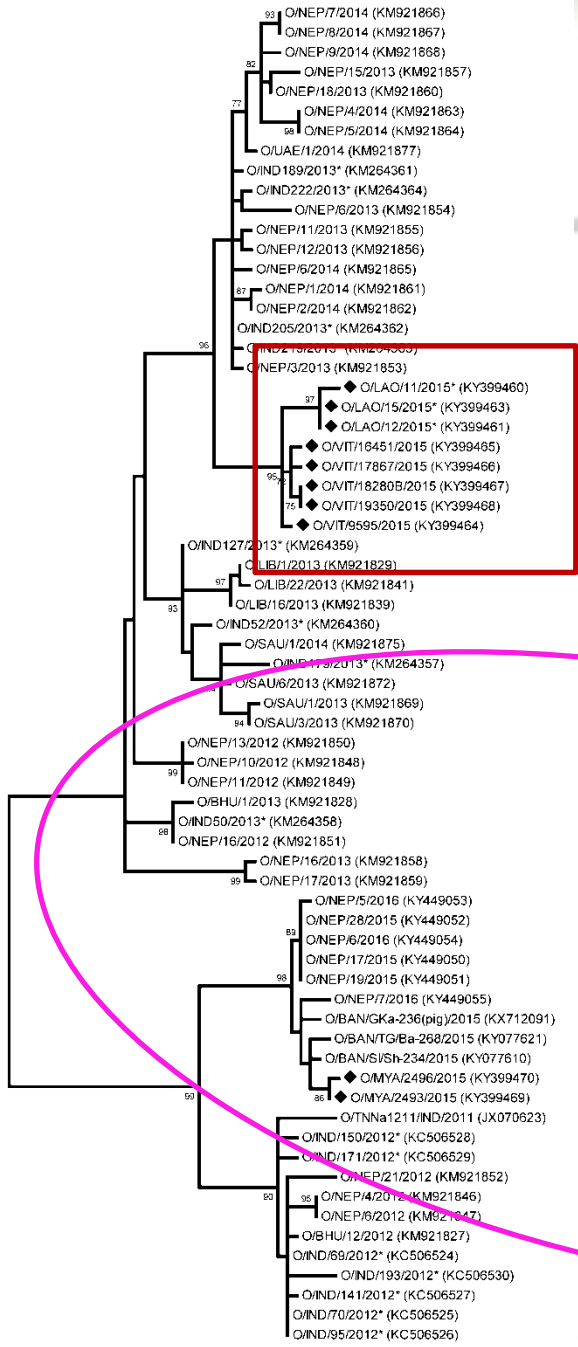


0.01

Ind2001d 2015

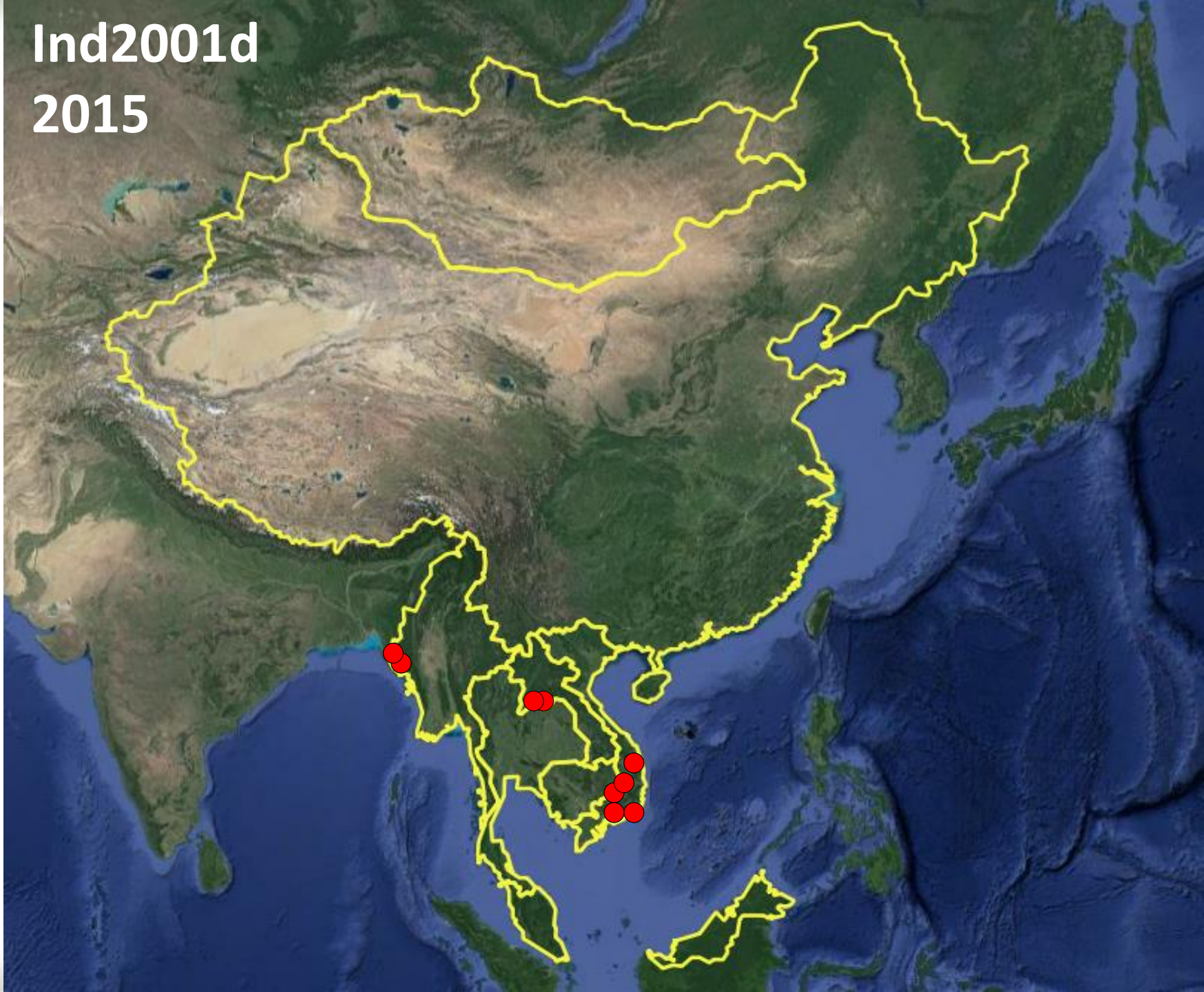


Ind2001d 2015

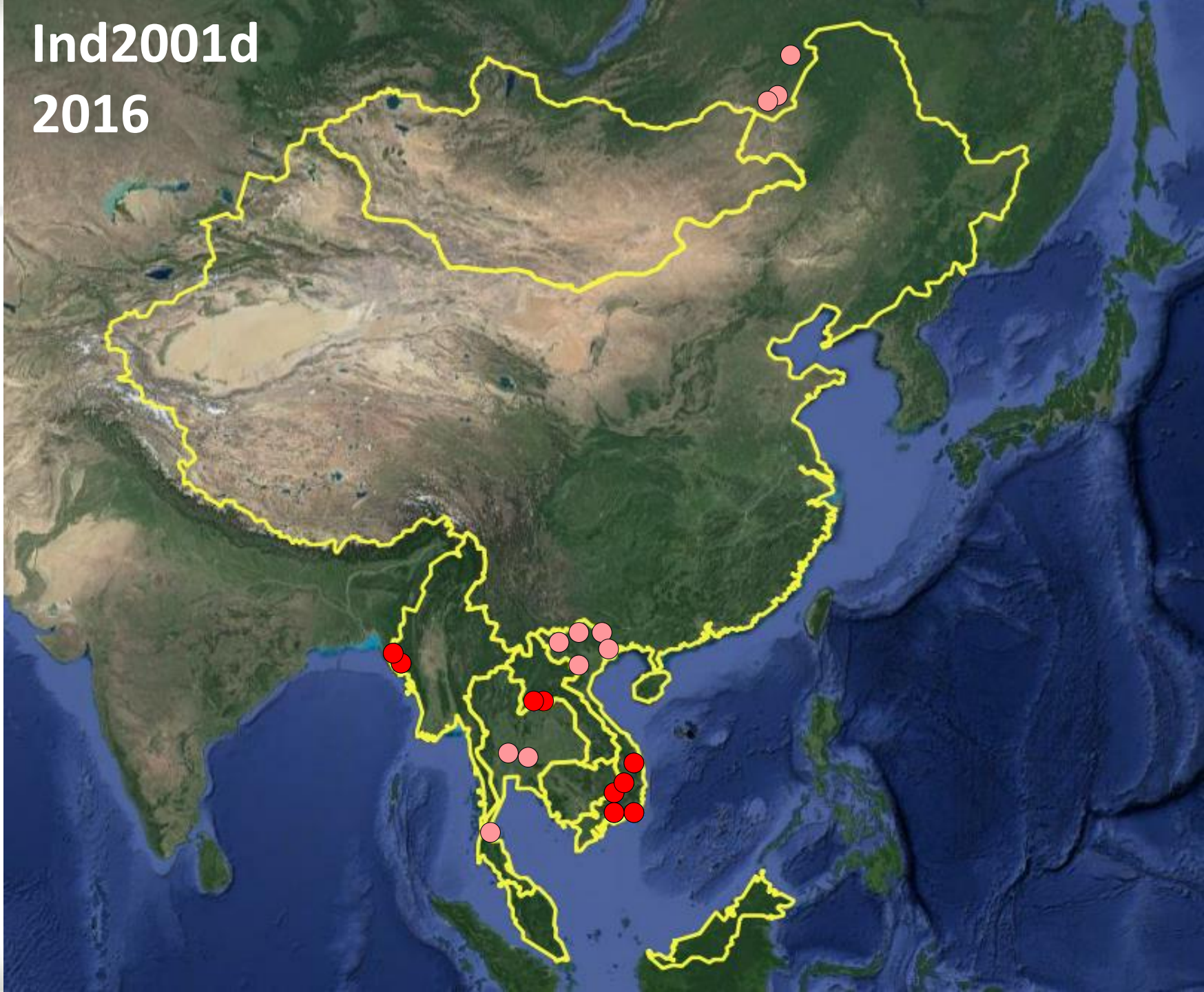


0.01

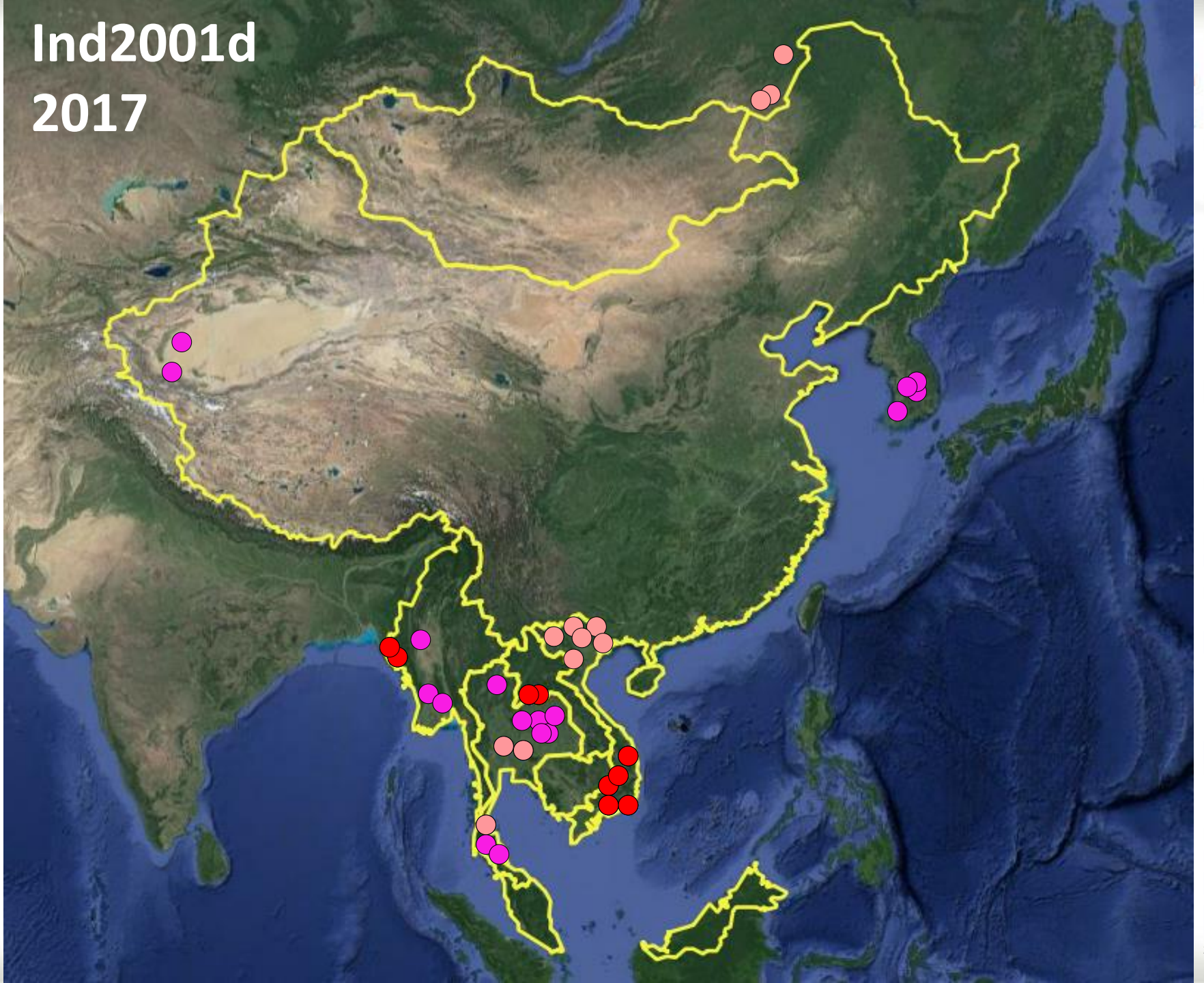
Ind2001d
2015



Ind2001d
2016



Ind2001d
2017



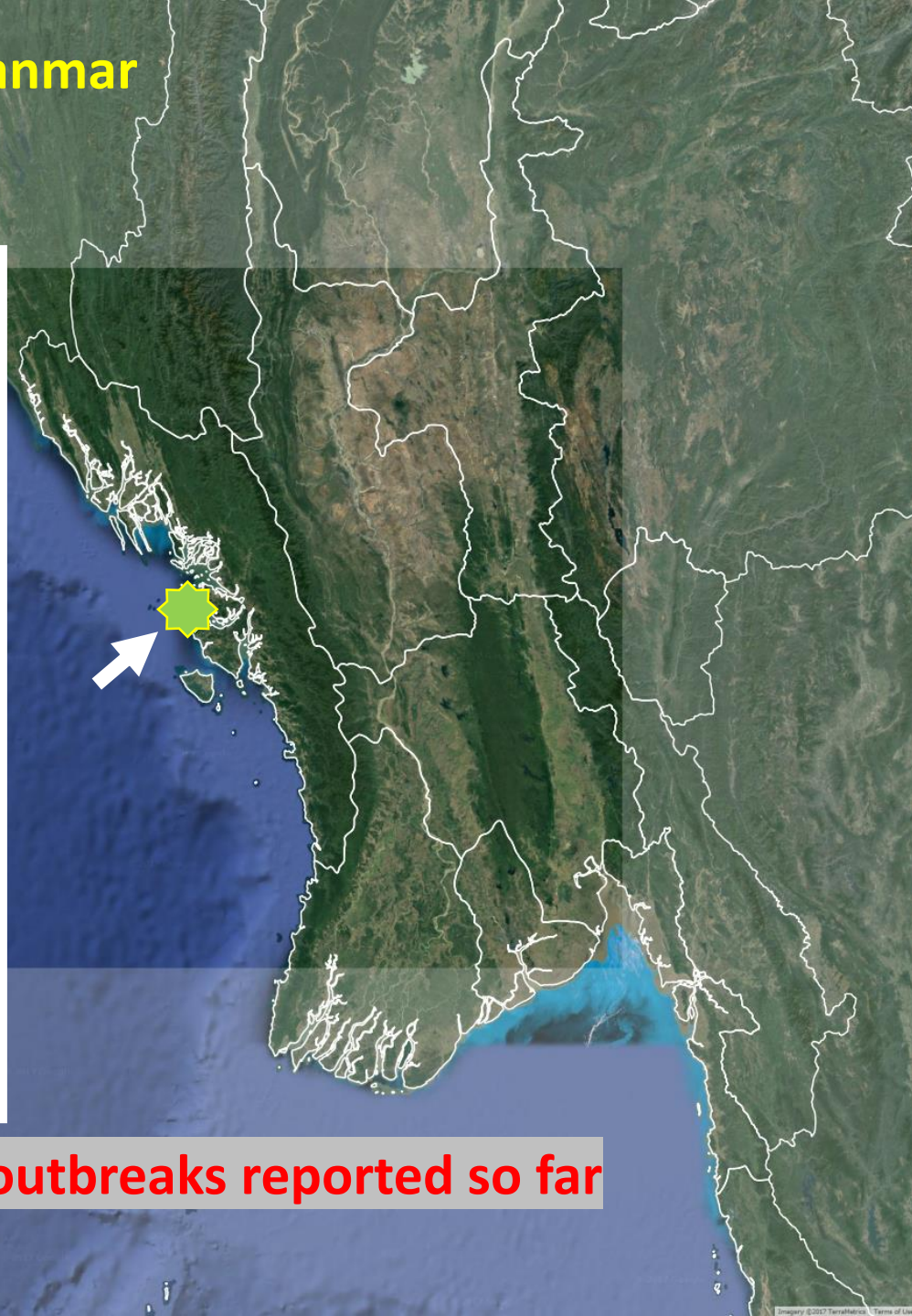
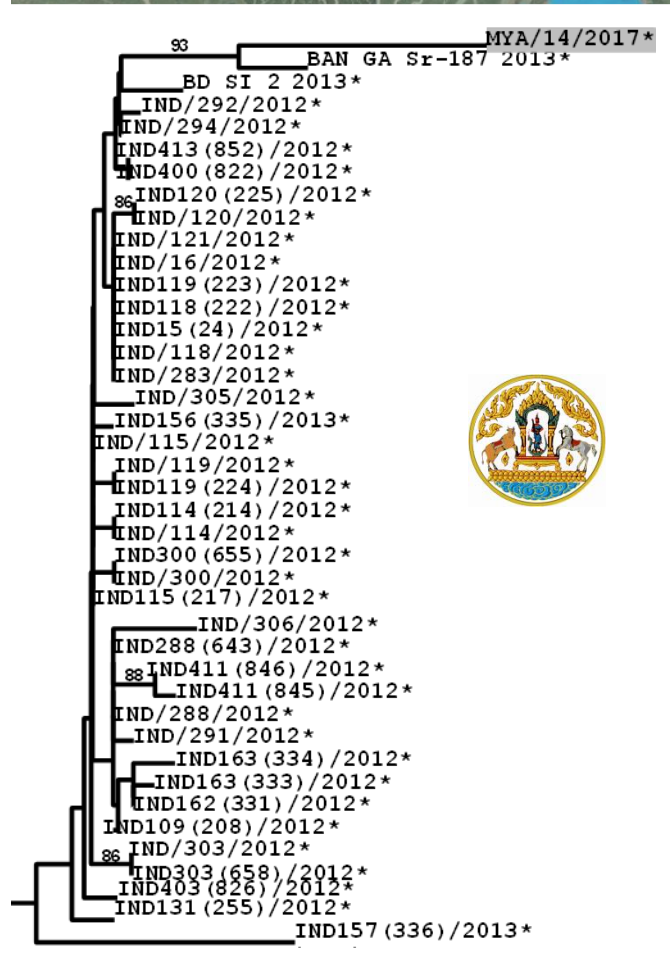
Emergence of an exotic strain of serotype O foot-and-mouth disease virus O/ME-SA/Ind-2001d in South-East Asia in 2015

Y. Qiu¹  | R. Abila¹ | P. Rodtian² | D. P. King³ | N. J. Knowles³ | L. T. Ngo⁴ | V. T. Le⁴ | S. Khounsy⁵ | P. Bounma⁵ | S. Lwin⁶ | B. C. Verin¹ | P. Widders¹



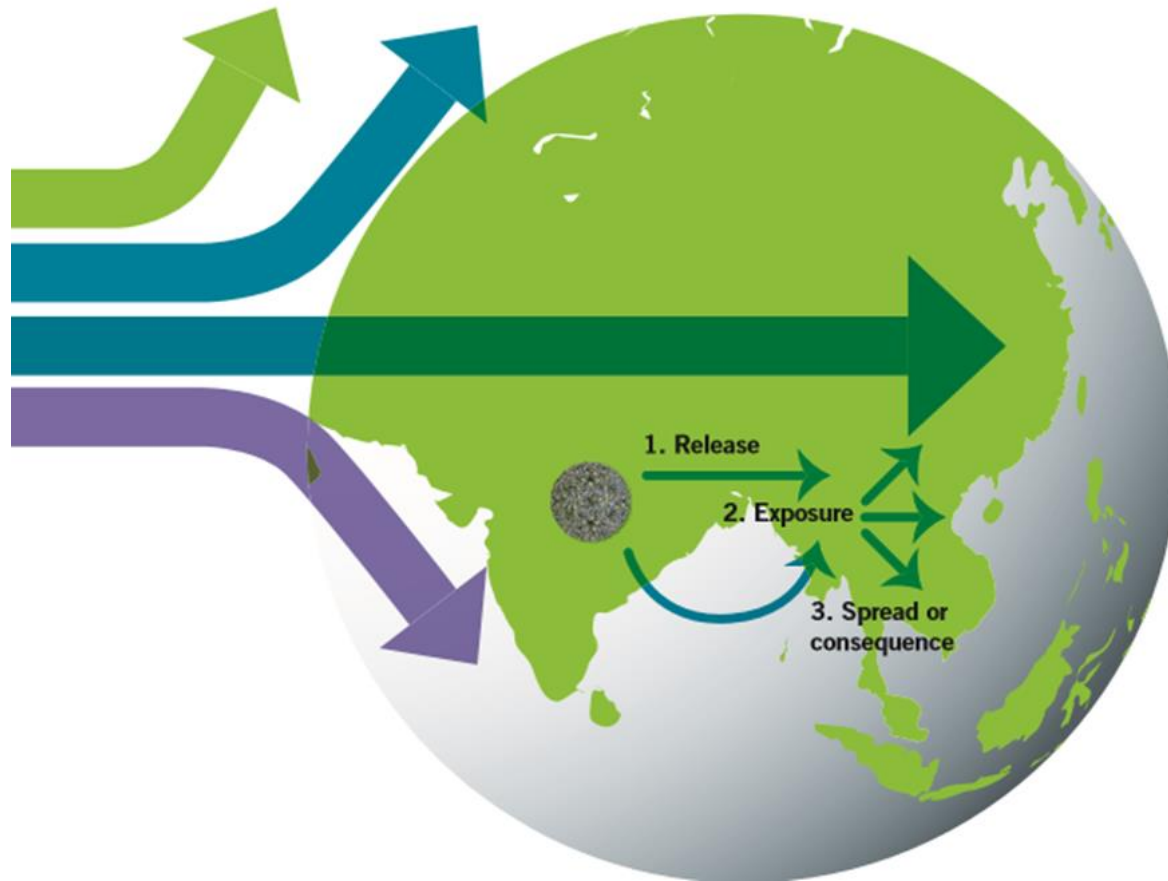
How to cite this article: Qiu Y, Abila R, Rodtian P, et al. Emergence of an exotic strain of serotype O foot-and-mouth disease virus O/ME-SA/Ind-2001d in South-East Asia in 2015. *Transbound Emerg Dis.* 2017;00:1–9. <https://doi.org/10.1111/tbed.12687>

Serotype Asia 1 in Myanmar in January 2017



No further Asia 1 outbreaks reported so far

Risk analysis on incursion of exotic FMD viruses into Southeast Asia



The risk of further incursions of exotic FMDVs into SEA is not a matter of “if” but rather of “when” !

Report available online: <http://www.rr-asia.oie.int/fileadmin/FMDbook-v5.pdf>

Conclusions

- Does it represent the whole picture of the regional FMD situation? -> More enhanced surveillance in member countries is highly desirable;
- Multiple incursions of exotic FMDVs have been detected -> Regional FMD situation is very dynamic -> timely characterization of FMDVs and information sharing is urgently needed;
- Risk mitigation measures to be implemented on the regional and national levels to control further risks of introduction and spread of exotic viruses.

Thank you for your kind attention !



WORLD ORGANISATION FOR ANIMAL HEALTH
Protecting animals, preserving our future

Risk Pathway: Cattle/Buffalo movement

