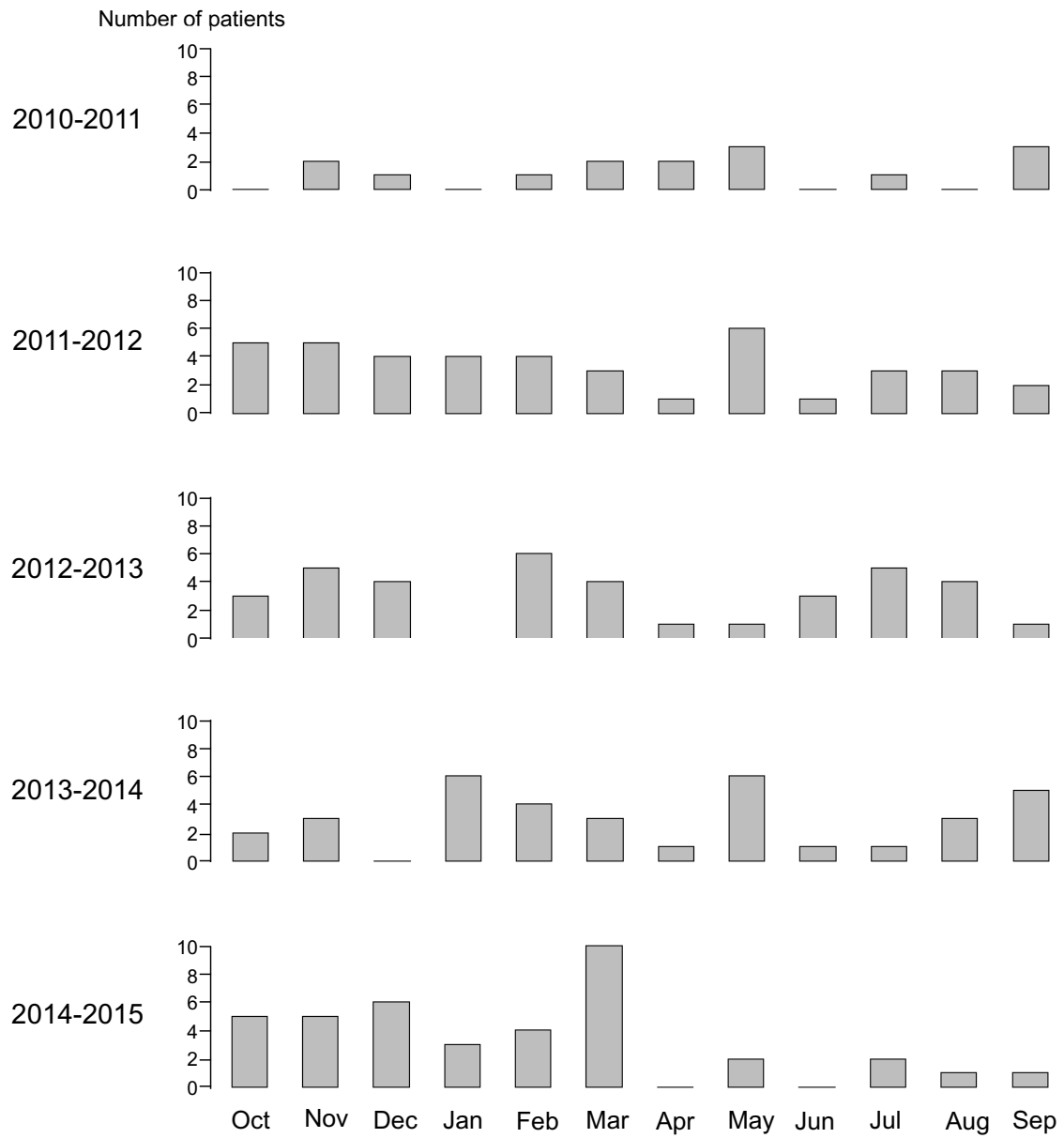**Supplemental Figure 1. Locations of JAMI participating centres**

JAMI participating centres are shown on Google Map® as blue markers.

Supplemental Figure 2. A representative map showing rivers, lakes, ponds, and sea in the Tokyo-Yokohama area

Rivers, lakes, ponds, and sea are highlighted with blue using the "My Map" application of Google Map®. A square denotes the area shown in supplemental Figure 4.

Number of patients

Supplemental Figure 3. The number of onsets of anti-MDA5-associated ILD in each month starting from October 2010

The number of anti-MDA5-positive patients who developed the disease in each month is shown in a bar.
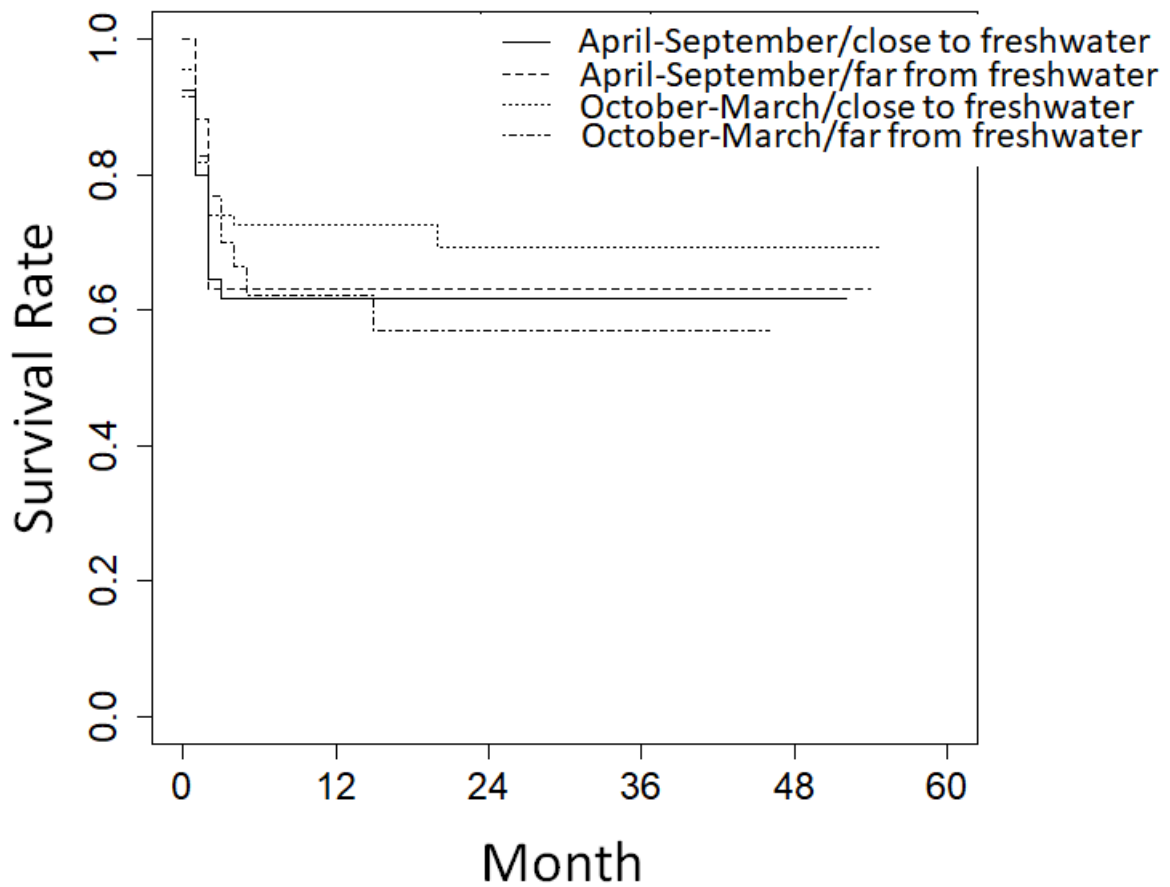
Supplemental Figure 4. A representative image of the residence at disease onset in patients with PM/DM-associated ILD

Residence of patients with PM/DM-associated ILD at disease onset is shown in the map of the mouth of Tamagawa river (a square area shown in supplemental Figure 2) using the "My Map" application of Google Map®. A line denotes the shortest straight line between the residence and the nearest fresh water. Each marker was automatically placed according to the postal code of each patient. Red marker, anti-MDA-positive patients; brown marker, anti-ARS-positive patients; and green marker, anti-MDA5/ARS-negative patients.

Supplemental Table 1. Clinical characteristics of anti-MDA5-positive patients at disease onset stratified by season and residence

	Month and residence at disease onset				
	April-September		October-March		
	Close to fresh water (n = 40)	Far from fresh water (n = 17)	Close to fresh water (n = 66)	Far from fresh water (n = 35)	P
Demographics					
Age at onset, years	56 [34-78]	54 [38-70]	52 [31-74]	62 [43-72]	0.14
Male	13 (33%)	6 (35%)	26 (39%)	16 (46%)	0.70
Disease duration, months	2 [0-8]	1 [0-5]	1.5 [0-10.5]	2 [0-12]	0.26
Initial symptoms					
Skin eruption	24 (60%)	13 (76%)	29 (44%)	22 (63%)	0.05
Respiratory symptoms	11 (28%)	2 (12%)	14 (21%)	6 (17%)	0.57
Fever	3 (8%)	2 (12%)	15 (23%)	1 (3%)	0.02
Arthralgia	1 (3%)	0	6 (9%)	4 (11%)	0.31
Muscle symptoms	0 (0%)	0	2 (3%)	1 (3%)	0.72
Others	1 (3%)	0	0	1 (3%)	0.43
Diagnosis					
PM	1 (3%)	0	0	1 (3%)	
Classic DM	5 (13%)	4 (24%)	12 (18%)	9 (26%)	0.46
CADM	34 (85%)	13 (76%)	54 (82%)	25 (71%)	
Serum biomarkers					
CRP, mg/dL	1.1 [0.0-5.4]	1.1 [0.1-4.7]	0.9 [0.1-5.8]	1.0 [0.0-5.4]	0.92
CK, IU/L	172 [33-1026]	161 [78-1216]	137 [31-3756]	157 [44-1346]	0.82
KL-6, U/mL	730 [334-1973]	732 [426-1581]	869 [286-2436]	779 [318-2080]	0.38
Ferritin, ng/mL	634 [63-5479]	755 [119-2852]	670 [37-7018]	669 [248-2605]	0.79
Anti-MDA5 antibody level, units	91 [24-419]	173 [29-769]	113 [21-1196]	122 [18-1101]	0.61
6-month survival rates	62%	63%	73%	62%	0.70

Continuous variables are shown as the median [2.5-97.5 percentile]. Categorical variables are shown as n (%). P-values by Kruskal-Wallis test, Fisher's exact test, or Breslow test are shown as appropriate. The P-value for diagnosis was calculated by Fisher's exact test for a 3 x 4 table. Disease duration means duration from symptom onset to disease diagnosis. Initial symptoms were classified into skin eruption (i.e., specific and non-specific skin lesions and itch), respiratory symptoms (i.e., cough and dyspnoea), fever, joint symptoms (i.e., arthritis and arthralgia), muscle symptoms (i.e., weakness and myalgia), and others. Six-month survival was calculated by the Kaplan-Meier method. ARS, aminoacyl tRNA synthetase; CADM, clinically amyopathic dermatomyositis; CK, creatine kinase; CRP, C-reactive protein; DM, dermatomyositis; KL-6, Krebs von den Lungen-6; MDA5, melanoma differentiation-associated gene 5; PM, polymyositis.

Supplemental Figure 5. Survival curves of anti-MDA5 -positive patients

Anti-MDA5-positive patients were divided into 4 groups according to the season of onset (April-September or October-March) and the residence of onset (within 1.75 km from freshwater waterfront [close] or not [far]). The survival rate did not show a significant difference among the 4 groups.